Volume 89 Number 10

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

STEEL enters September with the mixed emotions of a man who, after treasuring a promissory note for many months, has presented it on the due date only to be informed that it might be good on some later date. What made the low production months of the summer endurable for steel was the expectation of a rise—if only of seasonal proportions—in September. But if the industry depended only upon its order books, it would not be aware of the transition from August to September; the maturity of hopes for a September upturn has now been postponed until after Labor Day. By then, one-third of the month will have passed, thrusting a disproportionate burden upon the closing two-thirds.

Clouds Persist, but Barometer Rises

It should not be inferred, however, that steel is grievously disappointed. . . . Only twice this year have structural steel awards exceeded this week's total of 105,000 tons, again putting 1931 bookings (Page 60) ahead of 1930. . . . Line pipe mills, just getting releases (Page 55) against orders placed some weeks ago, are assured of good operations well into the winter. . . . Somewhat heavier releases for pig iron substantiate Detroit's expectation of improvement (Page 24) this month. . . . Steelmaking operations, while off a point, to 31 per cent, still retain (Page 62) some of the gains of August. . . . Railroads continue to take out more rails and fastenings (Page 59), and approach the period when inquiries for 1932 requirements will appear.

Statistical Record Is Encouraging

And while statistics necessarily record the past they also frequently point the way. . . . Orders for gray iron and steel castings, boilers and steel plates increased in July, according to department of commerce compilations (Page 20); automobile production in July was encouraging in that it did not fall below 200,000 units. . . . Exports of iron and steel products in July exceeded June by 8881 tons, recording (Page 21) the first gain in foreign trade since May; toward this showing tin plate and skelp contributed much. . . . The only balm in August pig iron production statistics (Page 19) is that the decline from July was 12.7 per cent, whereas July was 14.9 per cent lower than June. Seven stacks were dropped from the active list in August, compared with nine in July.

At Last, 'Average Year' Is Captured

Whatever the measure of improvement this fall, it can be accurately gaged by that hitherto elusive standard of comparison—the average

White hot wire rods, whipping around a coiler in a Wickwire Spencer Steel Co. mill, impart a stygian darkness to an otherwise well-lighted department

Wide World Photo

Another bar market that is dull. Detroit's ancient house of correction, built in 1861, now is a museum. Its bars antedate any mill operating today

year. Fluctuations of business for 78 years, dating from the second year of the administration of President Pierce, have been analyzed, adjustments made for seasonal variations, and the average year charted (Page 17); there are twin highs in February and October, twin lows in July and December.

I.C.C. in Three-Ring Circus

As if the interstate commerce commission were not already in difficulties probing (Page 25) the efficiency of the railroads and trying to make up its mind on their plea for an advance in freight rates, the Illinois commerce commission must complicate the situation by localizing the commerce commission's decision in the Chicago switching rate case. Interstate switching rates may be advanced, the Illinois commission decrees (Page 17), but not intrastate rates, thereby nullifying 60 per cent of the proposed rise. . . . When the Institute of Scrap Iron and steel (Page 17) meets in Pittsburgh, Oct. 12-14, freight rates on scrap promise a weighty discussion. . . . Mileage rates, the interstate commerce commission rules (Page 17), must be based upon the shortest routes.

Steel House Magnet for Dollars

To coax timid dollars back into circulation and restore prosperity, industry must advance new ideas, such as the steel house, declares (Page 18) a Middle West bank. . . . Fabricators, who would be the chief beneficiaries of such a trend, have been observing the expansion of mills in the structural field, yet an analysis (Page 26) of building awards reveals a fairly even distribution of tonnage. . . . In Canada, as in the United States, shape business (Page 16) is in the vanguard of moderate improvement in business. . . . Eventually the department of commerce may standardize steel houses, as it has other products. Annual savings through standards are estimated (Page 42) as high as $250,000,000.

Day of Reckoning in Wages Near

With two-thirds of the year gone and reduced salaries and omitted dividends inadequate to make financial statements palatable, steel regards a lowering of wage rates as inevitable. There is some opinion (Page 15) that the new scales will be effective about Oct. 1. . . . At iron ore mines, as in steel mills, available work is being widely distributed, and producers are now rotating (Page 15) output, building up larger mine stocks than are otherwise warranted. . . . With alien arrivals to departures at a ratio of 1 to 2.3, the supply of labor (Page 25) is being decreased. . . . At sheet mills where wages impinge on market prices, wages are being cut (Page 15); at bar iron mills they are holding.

9199 Engineers Can't Be Wrong

Life insurance salesmen paint a fearsome picture of man's waning earning power after age 50, yet the American Society of Mechanical Engineers has discovered through a survey—and 9199 engineers can't be wrong—that the typical mechanical engineer (Page 32) attains his maximum earning power at age 55 with an annual income of $7600. . . . Such an engineer would meet the specifications of machine tool makers who, in reconstructing sales forces, find (Page 46) the glib talker and generous spender less efficient than the proficient fact-presenting sales engineer. . . . Machinery manufacturers will play an important role at the forthcoming safety congress (Page 18) at Chicago.

Slow Motion Speeds Production

Mass production requires a systematic and properly controlled flow of material from one operation to another and this can be accomplished by specially designed conveyors. A manufacturer of gasoline pumps recently made a complete installation of such equipment (Page 31) and now pumps move through the assembly, inspection, testing and painting departments to the shipping room on a series of roller conveyors. Elevators and turntables at chosen points facilitate the operations of workmen.

Steel Wage Reduction Is Reported Due About Oct. 1

A WAGE reduction in the steel industry is regarded as increasingly probable, and while there has been no announcement concerning the amount or the date when it will become effective, Oct. 1 is most frequently mentioned by those who consider a readjustment inevitable.

Steel producers are mindful of the fact that labor has borne a considerable share of the economic distress thus far, mainly in loss of working time, although every effort has been made to distribute available work over as many employes as possible.

Most of the leading steel producers have made an intensive study of the wage problem, with the view of alleviating distress as much as possible. With a reduction in wage rates may come some plan to spread work broadly, but not sufficiently to defeat the purpose of the cut. It is believed that steel labor appreciates the position of its employers.

Lower Earnings Reported

Sufficient time is believed to have elapsed since the reduction of dividends and salaries, and since other drastic economies have been effected, to indicate that not much more can be expected in these directions. With the fourth quarter approaching, and nothing more than a mild seasonal upturn in sight, steel companies believe further curtailment of costs is imperative, if business recovery is to be encouraged.

While Oct. 1 is the date most frequently mentioned, there is some opinion that it may be delayed. The disposition of the larger independents appears to be to await action by the United States Steel Corp., since its executives have been active in trying to avert a reduction. Nothing official is available on the subject from any of the larger companies.

Reflecting the diminishing income of workers due to the inability of steel companies to operate at satisfactory rates, the bureau of labor statistics reports that the average per capita earnings in steel and iron manufacture for one week in June was $22.87, a drop of 8.6 per cent from May, and 22.8 per cent below the average in June, 1930.

Wage rate reductions reported to the bureau by steel and iron manufacturers in the first half of 1930 affected only 13,460 employes. Recently some companies have made readjustments where it was considered that wage rates were operating unequally among their employes. Misinterpretation has given rise to reports in their communities that the general rates were reduced.

Dates Set for Appeal For Relief Funds

Washington—A nation-wide campaign for funds to relieve the burden of unemployment will be made from Oct. 19 to Nov. 25, according to Walter S. Gifford, director of the President's committee. The collection of the funds will be made by local organizations, Mr. Gifford announced.

Where local committees are unable to raise sufficient funds, county committees will be asked to shoulder the work, and if relief still is insufficient the state group will be asked to aid. Federal financial aid is not now contemplated.

Sheet Mill Wages Down; Bar Iron Rates Unchanged

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be reduced 3 per cent in September and October, due to a reduction to 2.40c per pound in the average sales price of Nos. 26, 27 and 28 gage black sheets in July and August. Two months ago there was a reduction of 4 per cent. The rates for September and October will be 7½ per cent above base. Following is a comparison of price averages and wage changes:

July-Aug.	2.40c	—3 per cent
May-June	2.50c	—4.5 per cent
March-April	2.65c	+1.5 per cent
Jan.-Feb., 1931	2.60c	—3 per cent
Nov.-Dec.	2.70c	—1.5 per cent
Sept.-Oct.	2.75c	unchanged
July-Aug.	2.75c	—4.5 per cent
May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
May-June	3.05c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged

Wage rates in bar iron mills having contracts with the Amalgamated association will remain unchanged for the next two months, puddlers continuing to receive $10.30 a ton, the rate in effect since Jan. 1, 1931. The average sales price of bar iron in July and August was 1.70c per pound. Further comparisons:

	1931	1930	1929
Jan.-Feb.	**1.70c**	**1.95c**	**2.00c**
March-April	1.70c	1.90c	2.00c
May-June	1.70c	1.90c	2.00c
July-Aug.	1.70c	1.80c	2.00c
Sept.-Oct.	.....	**1.80c**	**2.00c**
Nov.-Dec.	.....	**1.70c**	**2.00c**
Yearly average.		**1.841c**	**2.00c**

Rotate Mine Operations To Provide Work

More iron ore will be produced in the Lake Superior district the coming winter than necessary for early spring requirements. This will be done to provide as much work as possible. Giving employment to the miners, it is felt, will avert distress

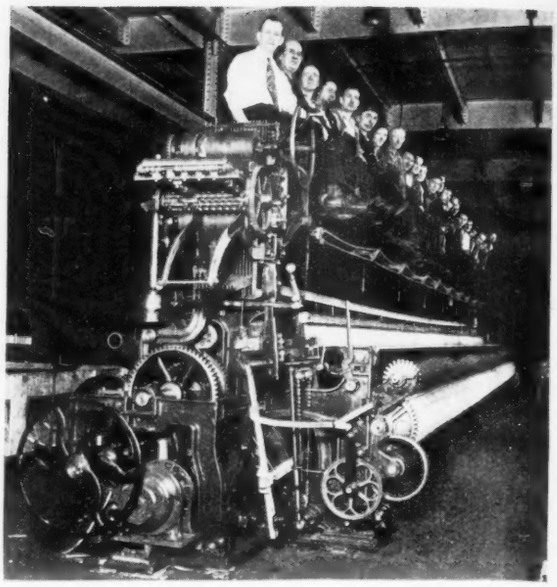
Photo, National Petroleum News

There is no pampering of line pipe in the field. When a bend is desired, a tractor is run out on a length of pipe, and something—always the pipe—has to give. Pictured above is a scene during the laying of the Sun Pipe Line Co. line from Marcus Hook, Pa., to Cleveland

and so lessen the burden on public and private charities.

Mining companies have been scheduling winter operations at underground properties. During the summer certain mines were shut down while others were providing a fair amount of employment. Many of those active during the summer will be closed for the winter. Operations have already been resumed at a number of mines that were idle during the summer. By rotating operations it is expected to benefit whole communities.

The worst hardship is expected in Minnesota, when snow and ice force a suspension at open pit mines, but some maintenance work will be provided.



Twenty-four men can stand, without harm, on the arch of this largest loom manufactured by the Crompton & Knowles Loom Works, Worcester, Mass. Overall length of this loom is 55 feet, its weight is 20 tons, it will weave tubular goods of great diameter—a tube of 1040 inches in circumference or about 27 feet in diameter being possible

A. O. Smith May Have Announcement This Month

A visit Aug. 27 by Myron C. Taylor, chairman of the finance committee of the United States Steel Corp., to the plant of the A. O. Smith Corp., Milwaukee, manufacturer of electric welded steel pipe, automobile frames, pressure vessels and other steel products, has brought out into the open numerous reports concerning the Smith corporation.

These reports—all unverified or denied—have included possible sale of the Smith corporation to the Steel corporation and the addition of steelmaking capacity at the Smith plant in Milwaukee. Inquiries for equipment also have been reported.

It is stated that the visit of Mr. Taylor to Milwaukee last week was personal, and that an official announcement concerning plans of the Smith corporation may be made later this month.

Structurals Lead as Canada Begins To Feel a Moderate Quickening

TORONTO, ONT.—Some branches of the Canadian iron and steel industry are beginning to show increased activity. While the improvement does not approach briskness, and the output of some plants continues on a low level, nevertheless, the outlook for the immediate future is much brighter than for months.

As regards new business, the structural steel branch has been the most favored. Several large contracts have recently been placed for steel for building construction in this district. Thomas Boyce, of the Disher Steel Construction Co., states that general business in the structural steel trades has taken a definite turn for the better within the past week or two. The Disher plant is operating at about 75 per cent of capacity, with favorable prospects of maintaining this rate.

In the Montreal district, business shows a more marked improvement. The Dominion Bridge Co. has received several large orders in the past few days, including a $330,000 steel contract for a bridge at Sorel, Que., and a contract for steel for harbor reconstruction at St. John, N. B. It has also closed substantial steel contracts in British Columbia. Other contracts will enable it to maintain operations at 60 to 70 per cent of capacity until next spring.

In Quebec province, a number of important steel contracts for bridge work are pending, and prospective business now in sight will, it is estimated, involve between 25,000 and 30,000 tons of steel. Some other branches of the industry also have been successful in obtaining new business. While tonnages are mostly small and of a diversified nature, there are indications that larger contracts will follow.

The Dominion Steel & Coal Co. has closed a contract with the Canadian Pacific Railway for 6500 tons of 100-pound rails, which will keep the company's rail mill at Sydney, N. S., in operation for several weeks. Car and locomotive factories still are busy on large orders received early in the year from the railways, of which the foundries have received a portion.

Retail Food Prices Show Slight Gain for July

Washington—Retail food prices in 51 cities of the United States, as reported to the bureau of labor statistics showed an average increase of about one-half of 1 per cent on July 15, compared with June 15, and an average decrease of about 17½ per cent since July 15, 1930. The bureau's weighted index numbers, with average prices in 1913 as 100, were 144 for July 15, 1930, 118.3 for June 15 and 119.0 for July 15, this year.

Bolt, Nut and Rivet Institute Is Organized

The American Institute of Bolt, Nut and Rivet Manufacturers was formally organized at a recent meeting in New York. George S. Case, president, Lamson & Sessions Co., Cleveland, was elected president. Approximately 70 to 75 per cent of the industry's capacity is affiliated with the institute. A meeting is scheduled in Cleveland Sept. 5 when a permanent secretary will be selected, and the location of the general headquarters will be decided.

Goslin-Fulton Merger Off

Negotiations for merging the Goslin-Birmingham Co. Inc., Birmingham, Ala., and the Fulton Iron Works Co., St. Louis, have been abandoned due to the fact it was believed the combined companies could not proceed to develop the comprehensive manufacturing

and engineering program which was under consideration.

Hold Hearings at Chicago On Freight Rate Advance

Chicago—Closing hearings on the petition of the railroads for the 15 per cent increase in freight rates were started here the first of the week by the interstate commerce commission. Western state commissions, midwestern agricultural and mining interests, and a number of raw materials shippers were ready to offer opposition.

Witnesses are to be presented at the Chicago hearing by 14 western state commissions. A number of private interests also have asked to present testimony, and the hearings may continue for two to three weeks.

The Chicago association of commerce is supporting the rate increase. Other organizations supporting the general proposition of freight rate advances, but withholding opinions on the definite percentage of increase, are the Illinois Manufacturers' association and the Illinois chamber of commerce.

Sunrise Miners Resume

Sunrise, Wyo.—Operations at the Colorado Fuel & Iron Co.'s Sunrise iron ore mine, suspended April 17, were resumed Sept. 1, giving work to 100 miners and additional railroad crews for shipping the ore to Pueblo, Colo. Production was started on a basis of 30,000 tons a month.

Full Time Building Stocks

Chicago—Lamson & Sessions Co. plant in the Chicago district now is working full time on rebuilding depleted inventories.

Illinois and I.C.C. Clash on Chicago Switching Rates

CHICAGO — Illinois commerce commission has denied railroads in the Chicago area increases of 25 per cent and more in railroad rates in the Chicago switching district, following recent action by the interstate commerce commission, at Washington, prescribing the higher rates, effective Nov. 10. The interstate commerce commission authorization of higher rates covered interstate traffic, while the Illinois commerce commission denial is based on intrastate traffic.

The state commerce commission also denied the railroads' request to boost rates from Chicago Heights, Ill., to the Chicago switching district. Much opposition had been expressed by shippers, including iron, steel and raw material interests, to the proposed advances, and a movement has been under way to have the interstate commerce commission reopen the case.

Rates Already Second Highest

It was pointed out that Chicago switching district rates already were higher than in any other metropolitan area, except New York, where lighterage of vessels and pier handling are involved. The new basis for rates resulted from a cost study, which was severely criticized by a great many shippers.

The interstate commerce commission order fixed 3 cents per 100 pounds on one-line hauls; 3.5 cents per 100 pounds for two-line hauls, and 4 cents per 100 pounds for three or more line hauls, carload minimum being 60,000 pounds.

As the matter now stands, the interstate commerce commission's decision, affecting interstate traffic, applies roughly to 40 per cent of the total. Illinois and Indiana commissions would have been obliged to have added their approval of the increases to make the advances effective on the remaining 60 per cent.

A thirteenth section proceeding before the interstate commerce commission may result because of the denial of advances by the Illinois commission. The Washington commission has the power, under section 13 of the interstate commerce act, to dictate the level of intrastate rates, when such rates discriminate against interstate rates. Shippers have charged that there is a tendency to make the metropolitan shipping centers pay for the money lost on branch railroad lines whose continued operations no longer are economically justified.

Shortest Routes To Determine Mileage Rates

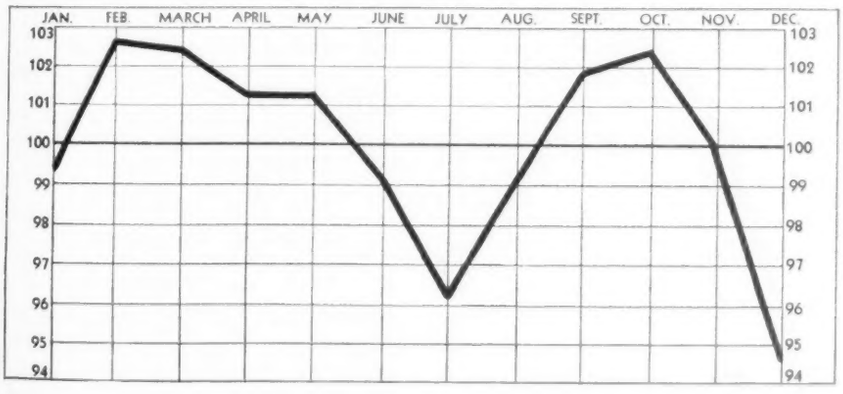
Washington—Mileage rates on iron and steel products in Trunk Line and Central Freight association territory to destinations within 100 miles of the point of production shall take "the lowest rate applicable over any line or route from and to the same points" constructed on the basis of the mileage scale set up in docket No. 17,000. The interstate commerce commission has thus amended fourth section order No. 10,639.

It is qualified, however, "that the relief herein granted shall not include any line or route where the distance over the said line or route is more than 70 per cent greater than the distance over the direct line or route between the competitive points."

Cast iron pipe and fittings are not affected.

Scrap Institute Meets at Pittsburgh, Oct. 12-14

Institute of Scrap Iron and Steel Inc., New York, will hold its semi-annual conference at Pittsburgh, Oct. 12-14. At a series of round table discussions, problems facing the scrap industry will be discussed. A feature of the convention will be a golf tournament in which three representatives from each of the 13 chapters of the in-



CHARACTERISTICS of the average year as regards industrial production, can be delineated more accurately than can the habits of the so-called "average man." Over a long period of years it has been shown that the composite index of daily production in January is 99.4; it moves up to 102.7 in February, drops slightly to 102.5 in March; declines to 101.3 in April; continues at that level in May; falls to 99.1 in June; reaches the summer low—96.3—in July; moves to 99.1 in August; to 101.9 in September; to 102.4 in October; is down to 100 in November, and 94.6 in December. These are the normal seasonal fluctuations, as worked out from the Federal Reserve board's indexes of production

stitute will compete for the president's cup.

Charles Dreifus is general chairman of the conference committee. Joseph Jacobson is chairman of the entertainment committee, H. M. Trimble of the banquet committee, H. C. Krider of the registration committee, H. F. Stocker of the golf committee, and L. W. Landay of the reception committee.

Concrete Steel Group To Formulate Future Plans

With a program arranged to deal with intimate problems of the reinforcing steel industry and to formulate plans for the next six months, the Concrete Reinforcing Steel institute will conduct its semiannual meeting at Buckwood Inn, Shawnee-on-Delaware, Pa., Sept. 28-30.

A number of committee reports have been dispensed with so that a larger part of the time can be devoted to more intimate presentation of matters of immediate concern. The program calls for board of directors meeting on Monday morning, regional conferences in the afternoon and the opening session in the evening. At the latter, the president will make his address; an institute engineer will summarize recent promotional activities; and Dr. Stephen I. Miller, executive manager, National Association of Credit Men, New York, will speak on "Let Us Look Ahead."

Tuesday's program schedules for the morning a series of short talks on conditions in representative cities and recommendations for the future, regional conferences in the afternoon and a banquet in the evening. Activities will conclude with a business session on Wednesday morning and a golf tournament in the afternoon.

Metal Groups, Leading in Safety, Prepare for National Congress

THREE co-operative groups of the National Safety council—the Metals section, Automotive and Machine Shop section, and the Power Press section—will conduct extensive programs in connection with the council's twentieth annual safety congress and exposition in Chicago, Oct. 12 to 16. These three groups represent about 1700 industrial organizations which employ 2,000,000 to 3,000,000 workers. Membership in the three groups comprises about one-third of the total number in the council. All three have pioneered in the promotion of safety.

Seventy-three establishments represented in the Metals section and which have been reporting each year to the council show a decline of 39 per cent in accident frequency rates and 15 per cent in severity rates in the last three years. The accident frequency rate for the entire industry is 35 per cent below the average for all industries, but the severity rate is 25 per cent above that for all industries. These reports show that the larger steel companies have frequency rates less than one-third the average for the smaller companies.

The accident rates of the foundry industry are not so favorable. The average frequency rate for the 138 establishments which reported to the council for 1930 was nearly three times as great as the frequency rate for the steel industry, and the severity rate was considerably higher.

In the machinery industry 141 establishments which have been reporting for the past three years show a 14 per cent decline in frequency rates but a considerable increase in accident severity rates.

Following is the program for the Metals section's meetings:

Tuesday, Oct. 13

MORNING

Reports of officers and committee chairmen.
"Metals Section Statistics for 1930," by D. S. Wechsler, chairman, statistics committee.
"Analysis of Accident Causes in the Metals Industry," by C. P. Waite, assistant supervising engineer, Travelers Insurance Co., Chicago.

Wednesday, Oct. 14

MORNING

Report of nominating committee and election of officers.
"Salvaging Human Power," by W. J. Peacock, head of personnel, Northern Paper Mills, Green Bay, Wis.
"Hand Labor and Trucking," by Frank A. Lauerman, safety supervisor, Republic Steel Corp., South Chicago, Ill.
"Good Eyesight Essential in Industry," by Dr. H. P. Davidson, Pullman Car & Mfg. Corp., Chicago.
"Good Housekeeping," by Arthur Berquist, safety engineer, Youngstown Sheet & Tube Co., East Chicago, Ind.

AFTERNOON

"Cleaning in the Metal Industry," by Dr. Leonard Greenburg, United States Public Health Service, Yale Medical school, New Haven, Conn.
"Safety Kinks," by John A. Oartel, chief of safety bureau, Carnegie Steel Co., Pittsburgh.
"Conveyorized Foundry System of the General Electric Co." by G. E. Sanford, General Electric Co., Schenectady, N. Y.

Thursday, Oct. 15

AFTERNOON

Award of certificates in safety contest, by General Chairman H. G. Hensel.
Discussion led by T. H. McKenney, superintendent, labor and safety, Illinois Steel Co., South Chicago, Ill.
"Penny Wise," a playlet by M. D. Conroy.

Sees Steel House Helping To Revive Business

New ideas in residential construction, especially steel frame houses, all steel houses and poured concrete homes, may furnish part of the market revival necessary to end the depression, declares the Union Trust Co., Cleveland, in its publication *Trade Winds*. Anything like general acceptance of steel frame residential construction might mean a 50 per cent increase in last year's market for structural steel. Says this bank:

"Industrial science has definitely taken a hand in the business of residence construction. Whether it be sooner or later, we may expect to see much advance in the science of building homes and a renewal of activity in proportion to the extent to which the public accepts the advances which are made."

Ohio Foundries Seek Lower Insurance by Safety

Seeking a lower insurance rate by reducing accidents, the Ohio Foundries association will launch a six-month safety campaign in nearly 600 Ohio foundries Oct. 1, according to Robert Hoierman, secretary.

Plans for the campaign were outlined shortly after the Ohio Industrial commission announced a deficit of $706,796 in four of the foundry classifications and increased the rates for the iron foundries and the nonferrous classification 25 and 33 1/3 per cent respectively, in an effort to reduce this deficit by nearly $500,000. Steel and malleable iron rates were not increased, although these two classifications showed a deficit of $230,992.

General chairman for the campaign is A. H. Kramer, president, Advance Foundry Co., Dayton, O., and J. W. Beall, insurance commissioner, Ohio Steel Foundry Co., Lima, O., is assistant general chairman.

Hardware Groups To Meet

"The Wholesalers' Function in Hardware Distribution" will be the theme of the convention of the National Hardware Association of the United States, to be held in Chicago Oct. 19-22. At a joint session of the American Hardware Manufacturers' association and the National Retail Hardware association the topic will be "Maintaining a Net Profit in Hardware Distribution."

Iron Output Drops Again in August; 7 Stacks Go Out

CONTINUING the momentum of the preceding three months, production of coke pig iron in the United States made another sharp drop in August. Likewise, a net shrinkage of seven in active blast furnaces forecasts that the bottom in production has not yet been reached. Both average daily output and total active units are within striking distance of the historical low points established in the summer of 1921.

August's average daily rate was 41,201 gross tons, the decrease from the July rate of 47,170 tons being 5969 tons per day, or 12.7 per cent. The rate for the month of August was the lowest since October, 1921, when iron was being produced at a 39,821-ton daily rate. In August, 1930, production was 81,455 tons per day.

AVERAGE DAILY PRODUCTION

	1931	1930	1929	1928
Jan.	55,337	91,573	110,742	92,113
Feb.	61,114	101,640	114,942	99,954
Mar.	65,448	104,930	119,662	103,199
Apr.	66,986	106,371	122,106	106,066
May	64,355	104,564	125,753	106,219
June	54,599	97,817	123,887	102,745
July	47,170	85,110	122,016	99,120
Aug.	41,201	81,455	120,845	101,193
Sept.	.....	75,893	116,548	102,120
Oct.	.....	69,851	115,747	108,824
Nov.	.....	62,182	106,081	110,155
Dec.	.....	53,732	91,513	108,702
Ave.	56,945	86,141	115,808	103,365

Total production for August was 1,277,242 gross tons, which compared with the 1,462,270 tons of July shows a loss of 185,028 tons. Both months had 31 days. Production for August, one year ago, was 2,525,105 tons.

For the 8-month period of this year, output has aggregated only 13,837,634 tons, against 23,468,160 tons in the corresponding period of 1930.

As the month closed, 75 blast furnaces were in operation, compared with 82 on July 31 and 91 on June 30. The totals for August and July were the smallest since July and August of 1921, when a low point of 69 for all time was established. During the month, 1 merchant furnace resumed operations and 2 were blown out or banked, with a net loss of 1 unit. Of the nonmerchant, or steelworks stacks, 5 became active and 11 were made inactive, making a net loss of 6 for this class.

AUGUST PIG IRON PRODUCTION

	No. in blast last day of month August	No. in blast last day of month July	Total tonnage made Merchant	Total tonnage made Nonmerchant
Ohio	20	22	53,289	257,320
Pennsylvania	19	21	47,861	263,024
Alabama	8	10	74,022	42,344
Illinois	8	7	53,283	66,931
New York	6	6	60,346	50,278
Colorado	1	1		
Indiana	5	5		
Maryland	2	3	150	179,502
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	0	1		
Tennessee	0	0	.....	72,876
Utah	0	0		
West Virginia	2	2		
Michigan	3	3		
Minnesota	0	0	15,065	28,459
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	4,420	8,072
Total	75	82	308,436	968,806

MONTHLY PRODUCTION

	1931	1930	1929
Jan.	1,715,443	2,838,751	3,433,028
Feb.	1,711,192	2,845,937	3,218,376
Mar.	2,028,906	3,252,822	3,709,518
April	2,009,582	3,191,119	3,663,167
May	1,995,001	3,241,477	3,898,344
June	1,637,998	2,934,508	3,715,104
July	1,462,270	2,638,441	3,782,511
Aug.	1,277,242	2,525,105	3,746,198
Sept.	.....	2,276,781	3,496,454
Oct.	.....	2,165,374	3,588,146
Nov.	.....	1,865,458	3,182,420
Dec.	.....	1,665,715	2,836,917
Total	13,837,634	31,441,488	42,270,183

Relating production to capacity, operations in August were at the rate of 28.7 per cent, compared with 32.7 per cent in July and 37.9 per cent in June.

Among furnaces blown in during the month were: In Ohio: One Hubbard, Youngstown Sheet & Tube Co. In Pennsylvania: Edgar Thomson F and H, Carnegie Steel Co.; Cambria H, Bethlehem Steel Co. In Illinois: Joliet No. 4, Illinois Steel Co. In West Virginia: Riverside, Wheeling Steel Co.

RATE OF OPERATION
(Relation of Production to Capacity)

	1931[1]	1930[2]	1929[3]	1928[4]
January	38.4	65.0	79.0	66.8
February	42.5	72.1	82.2	72.5
March	45.4	74.5	85.5	74.8
April	46.5	75.4	87.4	76.8
May	44.7	74.2	89.8	77.0
June	37.9	69.3	88.5	74.4
July	32.7	60.3	87.2	71.8
August	28.7	57.8	86.4	73.3
September	.....	53.8	83.3	74.1
October	.....	49.6	82.6	78.9
November	.....	44.1	75.8	79.8
December	.....	38.1	65.5	78.8

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons; [4]on capacity of 50,329,750 tons. Capacities by American Iron and Steel Institute.

Furnaces blown out or banked during August were: In Ohio: Central B, American Steel & Wire Co.; Jisco, Jackson Iron & Steel Co.; Canton, Republic Steel Corp. In Pennsylvania: Farrell No. 2, Carnegie Steel Co.; one Eliza and one Aliquippa, Jones & Laughlin Steel Corp.; Bethlehem D and Cambria F, Bethlehem Steel Co. In Massachusetts: Everett, Mystic Iron Works. In Maryland: Maryland E, Bethlehem Steel Co. In West Virginia: Weirton No. 2, Weirton Steel Co. In Alabama: Ensley Nos. 3 and 5, Tennessee Coal, Iron & Railroad Co.

Financial Reports Show Losses Easing

REFLECTING increased economies, financial statements are commencing to show slight margins of profit or diminishing losses. Among those issued recently are: American Rolling Mill Co., $159,503 second quarter profit against $663,049 loss in the first quarter and National Supply Co. with a loss of $785,222, compared to $1,186,211 loss the first quarter. Second quarter reports compared with the same three months a year ago show: Ludlum Steel Co., $7130 profit against $45,579 loss; Superior Steel Corp., $96,660 loss compared with $108,979 loss; Baltimore Tube Co., $4199 loss as against $15,422 loss. Empire Steel Corp. earned $7243 profit in July, $4800 in June.

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Continental Steel Corp., Kokomo, Ind., has omitted the quarterly dividend of $1.75 on the preferred stock, due Oct. 1.

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Spang, Chalfant & Co., Pittsburgh, had net profit of $1268 in the first half, compared with $1,881,980 in the first half of 1930.

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National Steel Corp., Pittsburgh, has declared regular quarterly dividend of 50 cents a common share, payable Sept. 10 to record Aug. 31.

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Allegheny Steel Co., Brackenridge, Pa., reports net loss for the June quarter of $35,172, compared with net profit of $667,905 in the same three months of 1930.

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Electric Controller & Mfg. Co., Cleveland, has declared two regular quarterly dividends of $1.25 each on the common, payable Oct. 1 and Jan. 1 to record Sept. 19 and Dec. 19, respectively.

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Crane Co., Chicago, has made its third consecutive reduction in common dividend by declaring quarterly distribution of 15 cents a share payable Sept. 15, a reduction from 25 cents paid in the preceding quarter.

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Wheeling Steel Corp., Wheeling

W. Va., has declared a dividend of 75 cents a share on the new 6 per cent preferred. This provides one half of the stated dividend, leaving 75 cents a share to be applied later.

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Keystone Steel & Wire Co., Peoria, Ill., has declared regular quarterly dividend of $1.75 on the preferred payable Oct. 15 to record Sept. 30. The company reports for its fiscal year ended June 30 net profits of $196,575, equal, after preferred dividends, to 28 cents a share. This compares with $585,909 or $2.20 a share in the preceding fiscal year.

Structural Orders Off, But July Shipments Rise

Shipments of fabricated structural steel were the highest for 1931 in July at 181,600 tons, or 45.4 per cent of capacity. However, new orders dropped from the comparative June total and represented only 39.8 per cent of capacity. Both bookings and shipments are estimated for the entire country from the actual report of 231 firms. Monthly report is by the department of commerce:

	Bookings		Shipments	
1930	Tonnage	Per cent capacity	Tonnage	Per cent capacity
July	270,000	67.5	274,800	68.7
7 mo.	1,768,800	63.2	1,878,800	67.1
Aug.	252,000	63.0	262,400	65.6
Sept.	155,600	38.9	243,200	60.8
Oct.	209,200	52.3	239,200	59.8
Nov.	151,200	37.8	195,200	48.8
Dec.	152,800	38.2	168,400	42.1
Year	2,689,600	56.0	2,987,200	62.2
1931				
Jan.	162,400	40.6	172,000	43.0
Feb.	158,400	39.6	166,400	41.6
Mar.	184,400	46.1	151,200	37.8
April	292,800	73.2	158,400	39.6
May	152,800	38.2	148,000	37.0
June	177,200	44.3	162,400	40.6
July	159,200	39.8	181,600	45.4
7 mo.	1,287,200	46.0	1,140,000	40.7

Gray Iron Orders Up After Three Months Decline

New orders for the gray iron foundries revealed a five-point gain in July over June, when a figure of 45 per cent of normal for the former month was reported by foundry members to the Gray Iron Institute Inc., Cleveland.

Production for July was at 50.6 per cent of normal; in June, 53 per cent. "Normal" in all cases is the average monthly production during the past three calendar years. Output percentage was based on the report of 160 foundries.

At the close of July, unfilled orders were at 32 per cent of normal, up four points over June.

Five of 129 foundry members regarded the business outlook at this time as good. Forty-one see it as fair; 57 as poor, and 27 as bad. Production of foundries in both the 100-250 tons capacity class and the one with rating of over 400 tons per month increased in July.

Auto Output Holds Above 200,000 Units in July

July production of automobiles, while down from June, nevertheless, held up well during an anticipated summer production slackness. Domestic passenger car and truck output was 218,961 for the month, compared with 250,657 for June. Department of commerce figures follow, Canadian figures being supplied by the dominion bureau of statistics:

	—United States—			Canada
1930	Total	Passenger cars	Trucks	Total
July	265,533	224,690	40,467	10,188
7 mo.	2,464,113	2,082,190	376,919	120,873
Aug.	224,368	185,619	38,363	9,792
Sept.	220,649	177,752	41,967	7,957
Oct.	154,401	115,476	38,343	4,541
Nov.	135,754	102,358	33,787	5,407
Dec.	155,701	122,748	31,528	5,622
Year	3,355,986	2,805,516	541,534	154,192
1931				
Jan.	171,851	137,805	33,534	6,496
Feb.	219,939	179,890	39,520	9,871
Mar.	276,341	230,835	45,096	12,993
April*	336,939	286,252	50,022	17,159
May*	317,163	271,135	45,688	12,739
June*	250,657	208,955	41,342	6,835
July	218,961	182,927	35,854	4,220
7 mo.	1,791,913	1,497,798	291,119	70,312

*Revised.

Malleable Castings Output Is Down to 20 Per Cent

Malleable castings capacity was engaged at only 20 per cent in July when 129 plants reported 19,837 tons produced. This is the lowest for at least three years. Orders were likewise affected, according to department of commerce figures:

	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
1930				
July	30,911	32,656	30,068	31.0
7 mo.	376,531	376,079	346,110	54.5
Aug.	25,614	31,845	25,409	26.2
Sept.	26,528	29,223	26,251	27.2
Oct.	28,785	29,206	24,171	29.0
Nov.	27,114	25,974	27,451	27.8
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
March	35,210	36,677	34,331	35.9
April	36,076	37,693	36,086	36.3
May	31,344	36,686	28,208	32.1
June*	23,837	28,132	22,176	24.5
July**	19,837	23,429	19,337	20.0
7 mo.	211,158	226,816	205,380	30.7

*Revised. **Preliminary.

Boiler Orders Hold Gain

At the second high for 1931, July's new orders for steel boilers, both stationary and marine, totaled 816 units. This compares with a revised figure for 818 in June. July's orders had an area of 687,058 square feet, against 677,434 in June.

For seven months of 1931, 4725 boilers have been ordered having an area of 4,656,946 square feet. Over the comparable 1930 period, 7761 units of 8,862,854 square feet of area were contracted for, according to the department of commerce.

Steel Casting Needs Rise After Three Months Fall

July orders for commercial steel castings improved from June's volume, which was the lowest of any month in ten years. Total production, however, showed an easing in July. Orders and output are both running at less than half the same period of 1930, according to monthly tabulation of the department of commerce:

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
July	57,850	40.1	78,977	54.7
7 mo.	641,459	63.5	715,548	70.8
Aug.	50,370	34.9	64,303	44.6
Sept.	49,542	34.3	61,919	42.9
Oct.	45,552	31.6	59,522	41.2
Nov.	48,123	33.3	44,290	30.7
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb.	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June*	26,136	18.0	35,018	24.1
July	32,655	22.4	31,751	21.8
7 mo.	279,196	27.4	310,802	30.5

*Revised.

July's Plate Orders Up; End Long Decline

Due to orders for refinery equipment and gas holders, orders for steel plates improved in July, after three months of declining specifications. Miscellaneous class was likewise slightly improved, according to the department of commerce tabulation which shows orders in three of the six classifications:

In Tons

1930	Total	Oil storage tanks	Blast furnaces	Miscellaneous
July	38,283	11,969	102	17,752
7 mo.	301,721	70,881	8,548	127,770
Aug.	36,513	10,056	750	21,910
Sept.	41,066	14,916	514	18,301
Oct.	30,197	4,518	231	18,665
Nov.	33,151	9,965	179	14,632
Dec.	26,787	5,118	135	13,227
Year	469,435	115,454	10,357	214,505
1931				
Jan.	27,518	2,598	111	20,845
Feb.	24,438	3,585	75	16,245
Mar.	31,056	2,538	833	21,697
April	29,916	7,749	25	17,783
May	26,210	2,411	230	20,370
June	22,806	4,679	356	15,817
July	27,232	4,136	51	18,756
7 mo.	189,176	27,696	1,681	131,513

Exports Best Since May; Tin Plate, Skelp Boost Total

INCREASE of 8881 gross tons was registered during July by the export trade in iron and steel products. The total of 84,466 tons of these goods exported, an increase of 11.7 per cent over the June trade, resulted from gains in the trade in 26 individual classes of products and brought about an enlargement of shipments to each major geographical area of the world with the exception of Europe, according to the iron and steel division, department of commerce.

IMPORTS AND EXPORTS
Gross Tons

	—1931—		—1930—	
	Imports	Exports	Imports	Exports
Jan.	40,781	92,745	43,624	223,766
Feb.	28,045	91,212	43,326	197,225
March	40,401	109,512	56,618	238,329
April	47,872	101,081	53,686	208,604
May	37,176	91,407	54,315	195,425
June	37,819	75,585	48,953	159,273
July	37,190	84,466	39,083	131,580
7 mo.	269,284	646,008	339,605	1,354,202
Aug.	.....	.....	35,405	150,922
Sept.	.....	.....	40,285	131,045
Oct.	.....	.....	38,344	131,845
Nov.	.....	.....	43,098	111,979
Dec.	.....	.....	40,754	101,992
Total	.....	.....	537,491	1,981,985

The import trade experienced a slight decline, 629 tons, to total 37,190 tons.

While 26 classes of products combined to bring about the 8881-ton increase in exports, there were 20 classes in which the trade took an opposite trend. The largest gain was that registered in skelp, 5219 tons, while the gains in the shipments of tin plate, 3377 tons; in scrap, 2970 tons; in welded pipe, 1731 tons, and in rails, 1395 tons, were also significant. The only decreases to exceed 1000 tons in amount were those in steel bars, 1276 tons, and in plain structural shapes, 1006 tons.

ORIGIN OF JULY IMPORTS
Gross Tons

	Steel ingots, blooms	Steel scrap	Cast iron pipe	Steel bars
Austria	.....	.....	.....	5
Belgium	608	.....	73	2,046
Canada	.....	2,471	.....	19
Czecho Slovakia	.....	.....	.....	5
France	73	.....	608	1,161
Germany	86	.....	.....	720
Sweden	18	.....	.....	247
Unit. King.	34	.....	.....	84
Total	819	2,471	681	4,287

Trade with Canada totaled 35,380 tons, an increase of approximately 6000 tons. This total included 8752 tons of skelp, 6292 tons of plain shapes, 3842 tons of black steel sheets, and 3351 tons of boiler and other plates. Increase in the trade with Japan amounted to nearly 4000 tons, the 10,817-ton total including 6957 tons of scrap and 1231 tons of tin plate.

Exports of iron ore, all going to Canada, were 149,035 tons in July.

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	July 1931	June 1931	July 1930
Pig iron	6,148	9,333	9,139
Sponge iron	.....	.....	75
Ferromanganese, spiegeleisen (1)	2,917	1,898	5,020
Ferrochrome (2)	.....	25	18
Ferrosilicon (3)	47	36	187
Scrap	2,471	1,341	2,343
Ingots, blooms	819	1,622	2,507
Concrete bars	3,039	3,771	849
Hollow bar, drill steel	208	144	77
Merch. steel bars	4,287	4,128	3,490
Iron slabs	.....	.....	.....
Iron bars	130	214	24
Wire rods	687	564	485
Boiler, other plate	93	2	51
Sheets, skelp	1,413	1,856	1,007
Tin plate	36	7	40
Structural shapes	7,572	6,338	5,898
Sheet piling	.....	.....	616
Rails, fastenings	177	172	436
Cast pipe, fittings	681	1,112	1,734
Welded pipe	640	689	505
Other pipe	509	361	358
Barbed wire	1,492	857	388
Round wire	244	280	272
Flat wire, strip	91	25	52
Wire rope	69	206	179
Other wire	48	32	17
Hoops and bands	1,867	1,633	2,375
Nails, tacks	1,091	860	611
Bolts, nuts, rivets	138	6	9
Castings, forgings	64	123	76
Total	37,190	37,819	39,083

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

DESTINATION OF JULY EXPORTS
Gross Tons

	Galvanized steel sheets	Tin, terne plate	Black sheets	Steel bars
Argentina	19	1,089	1,121	9
Brazil	475	380	1	32
Canada	280	259	3,842	657
Central Amer.	268	3	.....	33
Chile	.....	163	5	29
China	163	2,026	169	1
Columbia	336	5	42	38
Cuba	165	267	30	7
Dutch E. Ind.	399	625	.....	.....
Finland	12	.....	.....	.....
France	.....	.....	224	1
Italy	.....	.....	76	.....
Japan	132	1,231	174	68
Java	59	400	3	.....
Mexico	312	897	289	10
Norway	97	.....	.....	.....
Panama	39	.....	.....	3
Philippines	2,043	65	18	206
Peru	60	.....	9	145
United King.	.....	.....	558	250
Uruguay	68	457	108	.....
Venezuela	197	11	.....	4
Total	5,192	8,790	6,952	1,645

ORIGIN OF JULY IMPORTS
Gross Tons

	Iron ore	Pig iron	Manganese	Ferromanganese
Algeria	6,680	.....	.....	.....
Belgium	115	.....	.....	.....
Brit. India	.....	5,339	4,622	.....
Brit. W. Afr.	.....	.....	9,960	.....
Brazil	.....	.....	7,595	.....
Canada	2	60	.....	2,235
Chile	65,944	.....	.....	.....
Cuba	22,000	.....	.....	.....
France	.....	.....	.....	51
Germany	.....	.....	.....	160
Italy	.....	.....	.....	124
Java	.....	.....	276	.....
Kwantung	8	.....	.....	.....
Mexico	178	.....	.....	.....
Netherlands	1	49	.....	.....
Norway	7,431	50	.....	.....
Sweden	6,538	.....	.....	.....
Soviet Russia	9,650	.....	15,956	.....
Spain	9,550	.....	.....	.....
United King.	.....	650	61	347
Total	128,106	6,148	38,470	2,917

EXPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	July 1931	June 1931	July 1930
Pig iron	370	764	453
Ferromanganese, spiegeleisen	88	1,036	54
Iron and steel scrap (including tin plate scrap)	13,460	10,490	15,379
Ingots, blooms	309	36	317
Iron bars	139	133	122
Steel bars	1,645	2,921	4,686
Alloy steel bars	100	87	145
Wire rods	1,708	2,412	2,266
Boiler plate, not fabricated	3,616	4,495	7,874
Skelp	8,753	3,534	9,698
Iron sheets, galv.	198	160	554
Steel sheets, galv.	5,192	5,879	7,325
Steel sheets, black	6,952	7,645	7,038
Iron sheets, black	329	485	1,097
Hoops, bands, strip	1,610	1,695	2,185
Tin, terneplate	8,790	5,413	17,273
Shapes, not fabr.	7,133	8,139	11,932
Shapes, plates, fabr.	1,232	1,242	3,662
Metal lath	173	108	412
Frames, sashes and sheet piling	128	227	2,832
Rails	3,084	1,699	8,413
Rail fastenings	1,133	729	1,472
Boiler tubes	416	463	765
Casing, pipe, seamless and welded	1,115	1,326	3,225
Malleable-iron screwed pipe fittings	267	340	680
Cast-iron screwed pipe fittings	120	89	435
Cast-iron pressure pipe and fittings	782	2,502	1,446
Cast-iron soil pipe and fittings	413	209	717
Welded black, galv. steel pipe	6,023	4,292	5,743
Welded black, galv. wrought pipe	602	638	925
Plain black or galv. wire	1,049	964	1,815
Barbed wire, woven-wire fencing	2,169	1,705	3,552
Woven-wire screen cloth	117	63	161
Wire rope	178	194	294
Other wire	320	335	640
Wire nails	943	616	844
Tacks	70	48	31
Bolts, nuts, rivets	437	344	821
Iron castings	369	259	356
Steel castings	270	114	729
Car wheels, axles	561	370	382
Forgings	523	551	813
Total	84,466	75,585	131,580

Industrial Men in the Day's News

Dr. H. L. Frevert, President, the Midvale Co., Nicetown, Pa.

BETWEEN 1909 and 1931 he has filled numerous important posts in his rise from a chemist's berth to the president's chair.

CHEMIST, chief chemist, superintendent of armor plant, superintendent in charge of metallurgy, general superintendent, and vice president were some of his titles.

FOR several years prior to entering industry he taught chemistry at Harvard university, from which he was graduated with high honors.

ONLY about 22 years were required by Dr. Harry L. Frevert to rise from the position of chemist in the chemical laboratory of the Midvale Steel Co., to the presidency of its successor, the Midvale Co., Nicetown, Pa. He was elected to that office Aug. 27 in succession to the late Alva C. Dinkey, whose death was noted in STEEL of Aug. 13. Dr. Frevert since 1923 had been vice president in charge of operations, and in that position he has been succeeded by Francis Bradley, formerly general superintendent of the company.

Dr. Frevert became associated with the Midvale organization in 1909. Prior to that he had served as professor in chemistry at Harvard university. With the increasing appreciation of the importance of chemistry in steelmaking, his services as chemist were obtained by Midvale Steel Co., and he began his work in its laboratory. A year later he became chief chemist, remaining in that position about two years. In 1915 he was made superintendent of the armor plant of the Midvale company and in 1917 he became superintendent in general charge of metallurgical treatment. Four years later he was made general superintendent of the plant. In 1923 he again was promoted to vice president in charge of operations of the Midvale Co., which company was formed to take over the Nicetown, Pa., plant of Midvale Steel & Ordnance Co. when the latter's other plants were acquired by Bethlehem Steel Corp. He held that post until his recent election to the presidency.

Born at Dayton, O., June 21, 1881, he was graduated from Harvard university in 1905 with an A.B. degree, *magna cum laude*. Three years later that institution conferred upon him the degree of doctor of philosophy. He was an Austin teaching fellow in physical chemistry at Harvard, 1904-1905, and was instructor in that department, 1905-1909. He is a member of the American Iron and Steel institute, Institute of Mining and Metallurgical Engineers, and Electro Chemical society.

FRANCIS BRADLEY, formerly general superintendent of the Midvale Co., Nicetown, Pa., has been elected vice president in charge of operations to succeed Dr. Harry L. Frevert, who as noted above has been elected president to succeed the late Alva C. Dinkey.

Mr. Bradley was graduated as a mechanical engineer from Massachusetts Institute of Technology. He succeeded Dr. Frevert as general superintendent of Midvale in 1923 and has held that position until his recent election to the vice presidency.

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J. Fred Mehlhope has been appointed district sales manager in charge of the Chicago office, 724 Straus building, 310 South Michigan avenue, Chicago, of Newton Steel Co., Detroit.

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Trusten P. Draper has retired as vice president in charge of operations, Sharon Steel Hoop Co., Sharon, Pa., and his duties have been assumed by other officers under the general direction of John A. Roemer, president. Mr. Draper has been with the company many years.

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F. C. Ryan has been appointed sales manager of Newark Wire Cloth Co., Newark, N. J. He was graduated in chemical engineering from Lehigh university and during the World war was connected with the United States bureau of mines. He formerly was sales engineer with New Jersey Zinc Co., and more recently was staff manager with Johns-Manville Sales Corp.

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A. M. Jones, for 33 years with General Electric Co., Pittsfield, Mass., retired Sept. 1 on pension. He was one of the pioneers at that plant, rising from punch press operator to superintendent of the largest manufacturing division of the works, the power transformer department.

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William B. Turner retired recently as divisional sales manager for Truscon Steel Co., Youngstown, O. Since the Truscon company acquired the metal lath and building steel departments from General Fireproofing Co.,

Mr. Turner has been in charge of that division.

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E. J. White, structural engineer with Hofius Steel & Equipment Co., Seattle, has been made manager of the structural department to succeed H. F. Miller.

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A. M. Rood has been made manager of the Dallas, Tex., branch of Massey-Harris Co., Racine, Wis., manufacturer of agricultural implements. He has been acting manager there since the resignation of E. L. Woods.

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Herb L. Wharton, formerly connected with the Shilling Foundry & Machine Co., Columbus, O., has been made general superintendent of the Marathon Foundry & Machine Co., Wausau, Wis.

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Jonathan A. Noyes, since Sept. 1, 1917, Lake Superior district manager at Duluth for Sullivan Machinery Co., Chicago, has been made manager of its coal mining machinery division. His successor is L. J. Cone, formerly with the district office of the Sullivan company in Los Angeles.

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Charles M. Gearing, division manager, Meriden, Conn., plant and member of the directorate, New Departure Mfg. Co., Bristol, Conn., has been appointed general works manager, with headquarters at Bristol. His duties will include general supervision of production in all three plants, Bristol, Meriden and Hartford, Conn.

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A. C. Streamer, assistant director of sales since 1926 of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed sales manager of the newly-created diversified products sales department. This division groups all Westinghouse products not specifically allied with transportation, central station or industrial fields.

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Hermen H. Brien, formerly with Belle City Malleable Iron Co., Racine, Wis., and Dayton Malleable Co., Dayton, O., will leave early in September for Russia to fulfill a 1-year contract with soviet Russia as superintendent of malleable iron division, Kharkov tractor plant in the Ukraine.

T. G. Stewart, formerly foundry superintendent, J. I. Case Co., Racine, has left for Russia to become superintendent of the entire Kharkov works.

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Edmund E. Burke, for eight years identified with Kent-Owens Machine Co., Toledo, O., in special sales and engineering work, has been made sales manager, covering both divisions of the company's operations. In addition to building special machinery to users' specifications, the company manufactures a complete line of hand milling machines for metal working.

Harold Stevens has been placed in charge of the Kent-Owens company's special service department, inaugurated to establish a closer relationship between the company and the engineering and production divisions of its customers' organizations.

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H. E. Chilcoat, who since September, 1928, has been sales manager of the air dump car department of Koppel

H. E. Chilcoat

Industrial Car & Equipment Co., Koppel, Pa., has been appointed general

(*Concluded on Page* 59)

Obituaries

MAJ. WILLIAM M. HOGG, 56, assistant to the vice president, National Tube Co., Pittsburgh, died at his Edgewood, Pa., home Aug. 17. During the World war he was in the ordnance department, United States army, and later served as chairman of the claims adjudication board. He became affiliated with National company 12 years ago.

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John F. Garrett, 42, foundry manager, Armstrong Mfg. Co., Springfield, O., died Aug. 12 in that city.

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Arthur C. Hewitt, general purchasing agent, International Business Machines Corp., Endicott, N. Y., died there Aug. 1.

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Reuben Hitchcock, 57, president of Cleveland Stoker Co., Cleveland, died at Kirtland, O., during a golf game Aug. 29. After practicing law in Cleveland for several years he became president of Cleveland Folding Machine Co., in 1913, which two years ago was sold to Dexter Folding Machine Co.

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Edward A. Yellis, 55, safety instructor, Bethlehem Steel Co., Bethlehem, Pa., died Aug. 26.

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Abram Gross, secretary-treasurer, Spring City Foundry Co., Spring City, Pa., died Aug. 19, at Atlantic City, N. J.

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Mark Work Bushnell, at one time president and general manager, Standard Metal Works Co., Thompsonville, Conn., died recently.

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John Heggie, 89, one of the founders of James C. Heggie & Sons Inc., Joliet, Ill., and associated since 1903 with William Heggie Boiler Co., Joliet, Ill., died Aug. 29.

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Harold A. Lindahl, 34, vice president, Henry Lindahl Foundry & Machine Co., Chicago, died Aug. 31. He was a brother of Fred H. Lindahl, president of the company. He attended Lewis institute and spent his entire business career with the company founded by his father 35 years ago.

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Charles G. McGhie, 67, vice president and general manager of the Welland Vale Mfg. Co., St. Catherines, Ont., small tools, died there Aug. 29. He was identified with Whitman & Barnes Mfg. Co., now Whitman & Barnes Inc., Detroit, for many years prior to its absorption of the Welland Vale company.

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Frank F. Gorham, 67, manager of the maintenance department of Yates-American Machine Co., Beloit, Wis., with which he had been identified since 1900, died at Lake Mills, Wis., Aug. 19, while on a vacation. Prior to becoming affiliated with the Yates-American company, for several years he was in the engineering department of Fairbanks-Morse & Co., Beloit.

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H. O. Lange, 76, president Ferguson & Lange Foundry Co., Chicago, died Aug. 25. He was born in Germany in 1855 and 16 years later located in Muskegon, Mich., where he was interested in the lumber industry until 1899. Removing to Chicago, he entered the foundry industry, starting the Ferguson & Lange company.

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Paul F. Schryer, 59, general superintendent, tractor plants, International Harvester Co., Milwaukee, died Aug. 22. As a boy he worked in his native city of Sterling, Ill., and then became partner in Raleigh & Scudder, Freeport, Ill., manufacturers of gasoline engines. Several years later he became affiliated with the International company, and in 1915 was made superintendent of its Milwaukee works. He also had charge of Chicago and Rock Island, Ill., plants.

MIRRORS of MOTORDOM

DETROIT

SEPTEMBER, repository of the automobile industry's hopes for initiating a fall upturn, has arrived. Obviously, sufficient time has not elapsed for taking a true bearing on production. This week there is nothing to indicate a noteworthy change from last week, when output of passenger cars and trucks was just short of 48,000 units, compared with 50,000 in each of the preceding three weeks.

Hopes entertained for September were more sanguine at the beginning than at the end of August, but there still is an underlying feeling that after Labor Day a stronger production situation is certain—not much stronger, but enough to turn the tide.

Considering the last four months of the year as a unit, the prospects are not one whit altered. Whatever September has lost in prospective production appears certain to be recouped by the later months. From the encouraging increase in pig iron releases by automotive foundries, and the broader demand for machine tools from important interests, a moderately brisk last quarter seems assured.

Must Order Steel Soon

Thus far, specifications for finished steel disclose no quickening due to needs for new models, but if a number of new cars are in production by the middle of October, as now expected, mill production of this material must be under way within two weeks. Automotive foundries are ordering out a little more iron for October.

As noted last week, many Ford employes are returning the Tuesday after Labor Day. Close to 25,000 have been ordered back on that date, with as many more to return by the following week, or by Sept. 15. The best information penetrating the wall of secrecy thrown around Fordson is that it will be the middle of October before the revised Model A is ready for production.

Indicative of the uncertainty in Ford's own ranks, a large eastern Ford agency is urging prospective buyers of Fords to close now, regardless of the new model, it being promised that if a new Ford is out within 60 days all cars purchased now will be accepted for their purchase price minus $100.

Plymouth Still Third

In the past week Ford assembly operations eased off 300 units to about 3700 daily, 3 days a week. Chevrolet, approaching its annual inventory period, continued unchanged at 3500 units daily, 4 days a week. Plymouth, meanwhile, has again expanded its schedule, now being at 1500 units daily, 6 days a week. The score of the big three, on a weekly basis, thus is Chevrolet 14,000, Ford 11,000, Plymouth 9000.

Chrysler, still on a 3-day week, has dropped its production from 450 daily to about 300. Dodge also has retreated, its weekly total falling from 1900 to 1300, with the present schedule about 350 units daily, 3 days a week. DeSoto has held at about 600 units weekly. Thus, of the four main Chrysler divisions, Plymouth has increased, DeSoto held steady, Chrysler and Dodge declined.

Willys-Overland continues rather stable at 300 units a day, 4 days a week, with sales reported slightly in excess of production. Hudson-Essex, operating only 2 days a week, reports a weekly total of 700 to 750 units. Graham has dropped to a 2-day week, 85 units daily. Oakland-Pontiac, waging an extensive advertising campaign and approaching a model change, is on a 5-day week but has reduced its weekly total from 1650 to about 1250.

Other manufacturers whose weekly output has been reduced moderately are Buick at 1100, and Oldsmobile at 800. Those holding steady are Studebaker at 1200, Nash at 1300, Reo at 200, Packard at 425, Cadillac-LaSalle at 190, Devaux-Hall at 250, Durant at 200. Auburn-Cord has increased slightly to 500 units weekly and Hupp to 225.

◆

Each automobile that General Motors sold in the first half netted an average operating profit of $148.

The average cost per car was $576 for raw materials, labor, and plant depreciation. Thus the average sales price of $724.

But the $148 soon dwindled. Ninety dollars of it per car went into satisfying common stockholders. Then $36 per car went for federal taxes, employes funds, and preferred dividends.

When the smoke had cleared and the final reckoning was taken, $21.90 for each model labelled "G. M." that came from the assembly line, was tucked away in the profit and loss account.

Just to compare with last year: The operating profit per car was then $159. Less all dividend, tax, and other deductions, $61.25 was applied to profit.

Buys Grinding Machinery

Chevrolet has been a generous buyer of grinding machinery recently. . . . Dow Chemical Co., at Midland, Mich., is now producing a magnesium alloy, one-third lighter than aluminum, whose price has been reduced from 50 cents a pound to 30. . . . Edward G. Budd Mfg. Co., which makes many Chrysler bodies, reports its die and tool department at capacity on new jobs. . . . Brockway Motors Corp. will shortly begin the manufacture of 4 and 6-cylinder diesel motor trucks at its Marion, Ind., plant. . . . Perfect Circle Co., Hagerstown, Ind., manu-

facturer of piston rings, set an alltime profit record in the first seven months of 1931. . . . Curtis Mfg. Co., Los Angeles, is developing a line of heavy motor trucks, in which engine and transmission will be mounted on leaf springs, and load springs are designed to insure constant traction for the wheels at all times regardless of road variations. . . . Minneapolis-Moline Power Implement Co., Minneapolis, is manufacturing free wheeling units for the Advance Motor Co., Minneapolis. . . . Packard has joined the procession of automobile manufacturers driven to Canada by the high tariff, and is opening a plant this month in Windsor, Ont.

The Business Week In Washington

INDUSTRIAL production and factory employment declined by somewhat more than the usual seasonal amount in July, while the general level of commodity prices remained unchanged, according to the federal reserve board.

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Cut and wire tacks, cut nails and staples manufacturers have accepted the revised trade practice rules as approved by the federal trade commission.

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Census bureau announces that in 1929 nearly 20 cents out of every dollar spent in retail establishments in this country went for automobiles or automotive products.

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William Green, president of the American Federation of Labor, on the basis of reports received by his organization estimates that 5,100,000 persons were out of work the first of August.

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Railroads of the United States during the first seven months of this year placed 8264 new freight cars in service, according to the car service division of the American railway association.

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Secretary of Labor Doak has announced that deportations have increased and immigration continued to ebb during the first seven months of this year, so that the ratio of immigrant aliens entering the country to aliens departing was 1 to 2.3.

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Interstate commerce commission has sent out questionnaires to all Class I railroads in connection with its investigation of the efficiency of the roads. This questionnaire is in connection with employes and expenses of off line agencies maintained by the carriers.

Here and There in Industry

EASTON CAR & CONSTRUCTION CO., Easton, Pa., has purchased the industrial division of the Lakewood Engineering Co., Lakewood (Cleveland), O., and hereafter the complete line of Lakewood tier trucks, electric trucks, trailers, skids and industrial cars will be manufactured at Easton. This rounds out the Easton line of cars and trucks. The Easton company will render service to present users of Lakewood equipment.

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Nitralloy Corp. has moved its New York offices to room 657, 230 Park avenue.

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Tulsa Rolling Mills Co., Sand Springs, Okla., plant, machinery and equipment, will be sold at public auction Sept. 15 by Howell E. Hays, special master.

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National-Erie Co., Erie, Pa., suspended operations Aug. 21, with no date set for resumption. It is reported that some refinancing may be done, and operations might be resumed in September.

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Steel Co. of Canada Ltd. has awarded a contract to Arthur G. McKee & Co., Cleveland, at approximately $100,000, for remodeling and modernizing "A" furnace of the company's works at Hamilton, Ont.

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Reading Iron Co., Reading, Pa., announces the consolidation of its general executive and general sales offices on the Tenth floor, Terminal Commerce building, 401 North Broad street, Philadelphia. Offices will be occupied Aug. 31. Telephone is Walnut 5050.

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Ferro Enamel Corp., Cleveland, has enlarged office quarters at its plant to accommodate the engineering department, formerly located in the downtown office in Cleveland. Sales and advertising offices remain at 2100 B. F. Keith building, Cleveland.

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Otis Steel Co., Cleveland, has purchased from H. A. Brassert & Co., Chicago, a 12-inch 60-mesh, Burrell automatic strainer for cleaning the water to be used at the spray nozzles of the new Otis Steel 72-inch four-high strip mill.

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G. M. Diehl Machine Co., Wabash, Ind., has recalled its entire plant force to replenish its stock and fill an order for a new plant in Bassett, Va. The present order, keeping the plant engaged 30 days, is believed by the company to mark a turn for the better.

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American Zero Plate Co., St. Louis, has been incorporated by Don C. McCord, president, to manufacture refrigerating units and will move its manufacturing plant, now located at Dallas, Tex., to St. Louis, in the near future.

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Leavitt Machine Co., Orange, Mass., maker of reseating valve machines, has purchased control of the Swendeman Corp., Boston, manufacturing oil and water separators as well as drains for compressed air systems. Activities of the acquired company will be centered in Orange, Mass.

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Oklahoma Valve & Equipment Co., Tulsa, Okla., has been organized to manufacture industrial and oil field valves and equipment. A plant, consisting of nonferrous foundry and machine shop, each 40 x 70 feet, is under construction five miles south of Tulsa. Benjamin P. Hoffman is president and Beryl Hoffman secretary-treasurer.

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Lincoln Tank Co., Electra, Tex., has arranged to move its entire plant and general offices from Electra to Shreveport, La., where a new plant is under construction at Bossier City, La., a suburb. The company manufactures bolted and welded steel tanks, smokestacks, sanitary appliances and other sheet steel products. F. E. Doores is general manager.

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Allied Steel Castings Co., West Harvey, Ill., in the Chicago district, will start construction at once of a new crane runway and a storage and cleaning room, thus covering its acreage with plant buildings. The company is starting construction now partly to give employment to as many men as possible, and to be prepared for increased business activity later.

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Surface Combustion Co., Toledo, O., has sold to the Budd Wheel Co., Detroit, a pusher continuous heating furnace of the diffusion flame type. The furnace has an effective heating length of 20 feet and will handle 8000 pounds of work per hour—from atmospheric to 2250 degrees Fahr.—based on billets 2¾ inches square x 6 inches long and having a unit weight of about 10 pounds.

EDITORIAL

Who Receives Lion's Share Of Structural Awards?

DURING the three decades of the present century a condition has arisen in American industry which provokes frequent discussion. It is the practice, indulged in by many producers, of selling materials to manufacturers for conversion into finished products while at the same time the producers convert part of their material themselves and offer it for sale in direct competition with their customers.

The situation is particularly perplexing in the field of structural steel fabrication because the number of mills rolling structural shapes is limited while the companies engaged in fabricating and erecting the steel are numbered in the hundreds. The fabricators who are not identified with the mills believe that their competitors having mill connections enjoy certain advantages. Naturally, as a result of this condition, there is a constant undercurrent of suspicion and distrust.

To the credit of the leaders of the industry it must be said that efforts have been made through the American Institute of Steel Construction to iron out certain difficulties which arise from this troublesome situation. The problem is complicated by many factors which do not appear on the surface, yet in the face of these obstacles the committees on mill relations, which have functioned almost from the time the institute was formed, have kept at the task and have made some progress in clarifying certain aspects of the problem.

Consolidations Revive Anxiety Over Competition by Large Units

However the acquisition in recent months of a number of "independent" fabricators by the Bethlehem Steel Corp. has served to revive some of the old issues. Many of the unattached fabricators fear that the increased strength of Bethlehem in steel construction, viewed in conjunction with the always active and powerful American Bridge Co. of the United States Steel Corp., constitutes a threat to small fabricators more menacing than any which has existed in the past.

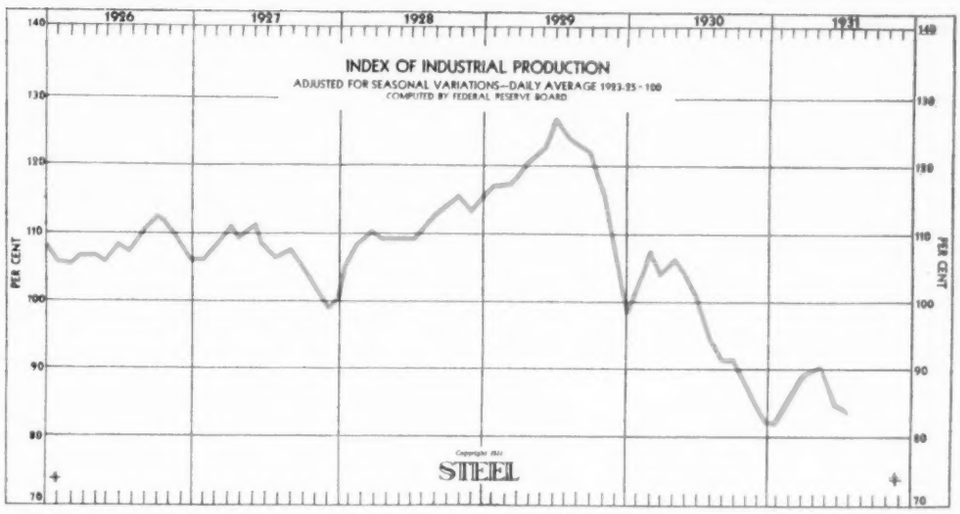
Much of this anxiety is based on the belief that the "mill" fabricators are making a determined effort to sieze the lion's share of the structural business. That this assumption is unwarranted is shown by the accompanying tabulation of structural awards, based on the weekly reports of contracts appearing in STEEL. A careful check shows that the awards credited to "mill" fabricators amounted to 30 per cent of the total in 1929, only 23 per cent in 1930 and 30 per cent in the first eight months of 1931.

Those familiar with the distribution of steel construction work know that the country requires the services of both large and small units. Industrial history shows that every important consolidation of strong companies has been followed by the rise to power of enterprising "independents."

Competition at the moment probably is abnormally severe, but once the pressure of the depression is relieved the opportunity for unattached steel construction firms will be as promising as it has ever been. Certainly the recent consolidations have not impaired the future for progressive small units.

	"Independent" Fabricators		"Mill" Fabricators	
1929	Tons	Per Cent	Tons	Per Cent
January	115,601	69	51,459	31
February	94,279	52	85,742	48
March	160,699	67	79,280	33
April	157,280	75	53,787	25
May	143,580	69	66,230	31
June	127,704	67	62,850	33
July	125,776	88	17,080	12
August	167,534	73	61,790	27
September	106,885	85	19,135	15
October	189,595	89	22,850	11
November	117,512	59	26,598	18
December	118,512	59	82,875	41
Year	**1,456,427**	**70**	**629,676**	**30**
1930				
January	95,478	72	37,458	28
February	127,630	72	49,417	28
March	92,699	79	25,475	21
April	90,130	79	24,812	22
May	173,480	72	69,385	28
June	93,160	73	34,540	27
July	126,941	70	54,220	30
August	148,259	88	20,575	12
September	120,656	84	24,911	16
October	150,793	87	22,800	13
November	110,313	85	18,938	15
December	69,969	58	50,035	42
Year	**1,410,508**	**77**	**432,566**	**23**
1931				
January	112,213	82	25,145	18
February	86,646	83	17,139	17
March	190,277	74	62,145	24
April	192,440	77	56,558	23
May	66,227	68	30,722	32
June	56,973	37	97,048	63
July	91,430	63	53,639	37
August	63,289	81	14,364	19
Year to date	**859,495**	**70**	**356,760**	**30**

THE BUSINESS TREND



1930	
July	94
June	100
May	104
April	107
March	104

1931	
July	83
June	84
May	89
April	90
March	88

Business Awaits Start of Autumn Activity

EAGERLY awaited September is here. Will it usher in the upswing in business—seasonal or better—for which the country has been hoping?

The outlook is moderately reassuring. Already an improvement has appeared in a number of industries. Activity in the manufacture of woolens and worsteds, boots and shoes, leather and several other items relatively closely identified with retail trade increased during the summer months.

Most tangible in the grist of favorable news is the resumption of the Ford plants. The Ford Motor Co. announces that from 15,000 to 25,000 of its former employes at Detroit will be called back for duty on Sept. 8. It is expected the number will be increased gradually to a total of 50,000 by the middle of the month. Coincident with the announcement is the release of orders for a limited volume of parts and accessories.

July output of motor cars in the United States and Canada was 223,181 units, as compared with 257,492 in June. August totals will be at least 15 per cent under those of July, but September will be moderately better. October should be a good month.

Prices in Many Lines Cease Wide Fluctuations, Exhibit Firmness

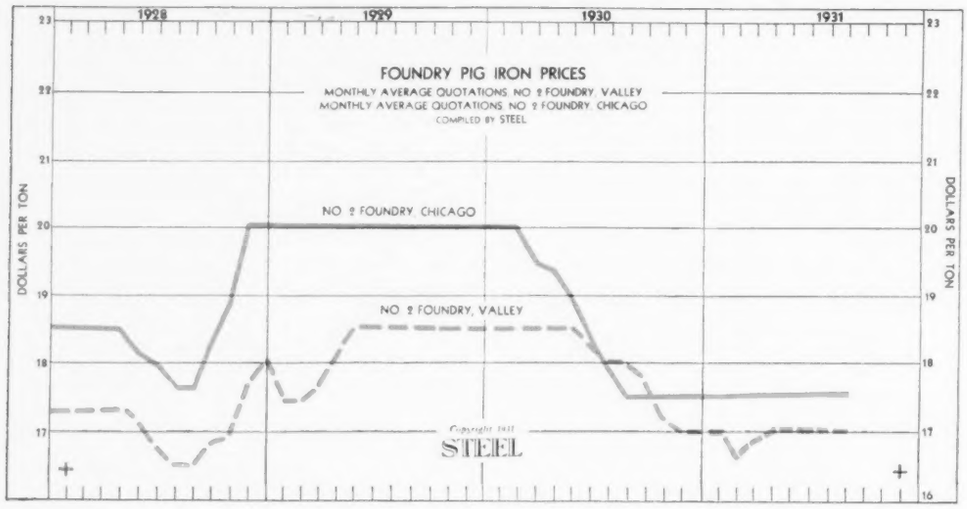
Exports of iron and steel, while still at low levels, showed a slight gain in July. Orders for steel castings were up in July for the first time since March. Building construction is declining but in the summer months of July and August activity in the construction of residences and commercial and public buildings in several important communities held up well. Industrial construction is lagging.

Commodity prices appear to be fluctuating within a narrower range than at any time in months. STEEL's composite of iron and steel prices stood at $31.04 at the end of August and the average for the month was $31.05, which is identical with the average for July. The composite for finished steel, at $48.72 at the end of August, reflects a firm tone which has continued throughout two months of exceedingly light demand. Prices of nonferrous metals also are exhibiting more firmness. Wheat and cotton are fluctuating somewhat, with cotton appearing to slightly better advantage. Artificial methods of restriction are having their effect in the oil industry and prices are stronger.

Potential Demand for Steel Piles Up, Confidence Is Needed for Its Release

How these various factors will affect the demand for steel during the remaining months of the year is an open question. Certainly the price structure is on a basis which should lend confidence to prospective buyers. Also it is clear that steel requirements are piling up faster than steel is being produced. It would seem that all that is required to create a moderate improvement in demand is a loosening of pent-up capacity to use steel.

This will not occur until necessity is greater or confidence is more prevalent. Steel operations during the first week of September seem likely to remain at around 30 to 31 per cent of capacity. Labor day is a rather definite dividing line between the summer vacation period and the days of fall activity. Therefore by Sept. 15, business will be able to judge the extent of the probable seasonal pick-up with more accuracy than it can be forecast from the present outlook.



Monthly Averages

	No. 2 Foundry Chicago	Valley
Aug.	$17.50	$17.00
July	17.50	17.00
June	17.50	17.00
May	17.50	17.00
April	17.50	17.00
March	17.50	16.90

No. 2 Foundry at Chicago Passes Thirteenth Month at $17.50

Both the Chicago and valley quotations for No. 2 foundry pig iron held unchanged throughout August. For the Chicago price it was the thirteenth consecutive month at the level of $17.50. At $17, the valley price completed its fifth month. A year ago No. 2 foundry at Chicago had ended its sharp drop from $20 and was in the first month of the stabilized average now prevailing. The valley quotation in August, 1930, held temporarily at $18 before continuing its downward reaction. The last previous instance of an unvarying spread was when the Chicago price held at $20 from November, 1928, to February, 1930, inclusive, and the valley quotation at $18.50 from May, 1929, to May, 1930, inclusive.

Total Automobile Output in United States And Canada Falls 13 Per Cent

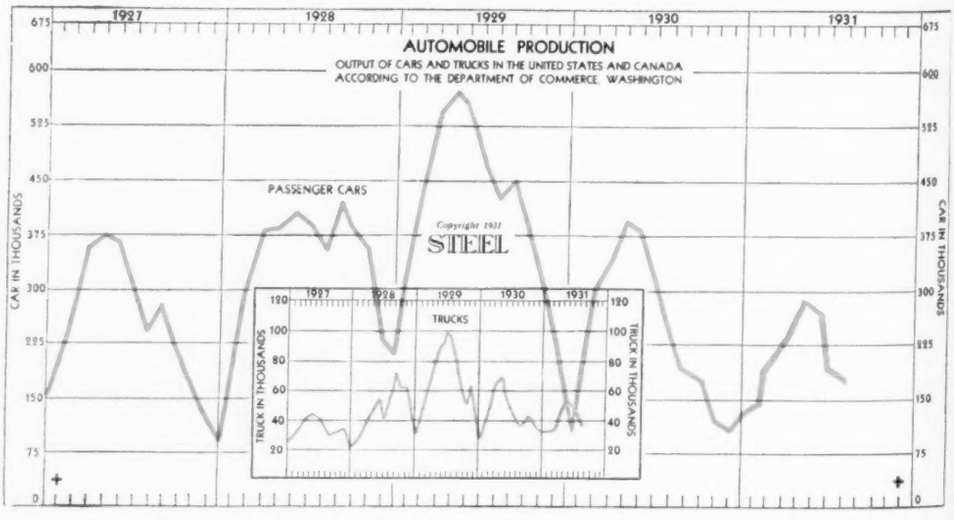
The United States in July produced 183,107 passenger cars, the lowest output for this class since last February. In June production was 209,315 and a year ago, 222,205 cars. American truck output dropped from 41,342 units in the previous month and 43,328 in July, 1930, to 35,854 units, which was the smallest volume since last January. Canadian manufacturers made only 3151 passenger cars, compared with 5583 in June, and this class established a new low. Canadian truck output, 1069 units, tied the previous low of December, 1929, and the aggregate output for Canada was a new low. Total production of all classes in the United States and Canada for July, 223,181 cars and trucks, was down 13.3 per cent from the June figure.

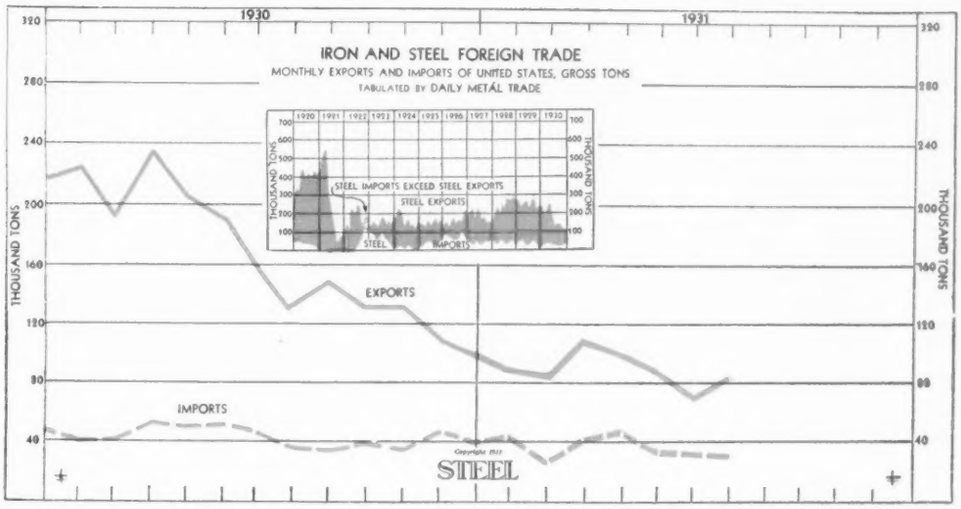
Passenger Cars

	1931	1930
July	186,258	230,761
June	214,898	298,140
May	282,096	541,310
April	300,960	393,804

Trucks

	1931	1930
July	36,923	44,960
June	42,594	51,466
May	47,805	94,940
April	53,138	74,477





Exports

	Tons
July, 1931	84,466
June, 1931	75,585
July, 1930	131,580

Imports

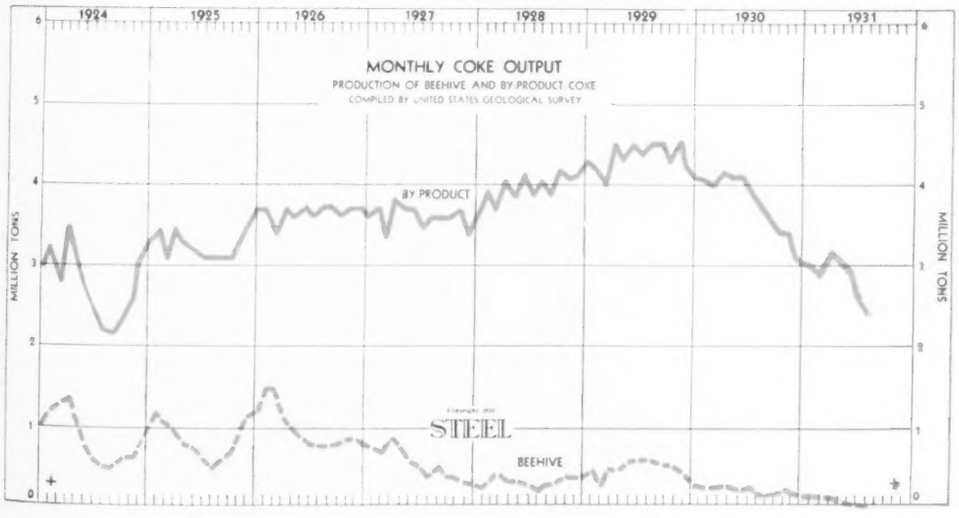
July, 1931	37,190
June, 1931	37,819
July, 1930	39,083

Exports of Iron and Steel Alter Long Downward Course, Gain Slightly

Although it was small, the gain in iron and steel exports during July was the first occurring in this item of foreign commerce since last March. The July export trade was 84,466 tons, lower than that of any of the first five months of the year, but slightly above the volume in June, 75,585 tons. Imports continued to hold at about the same level, being at 37,190 tons just 629 tons below June and 14 tons above May. The comparison with a year ago, in imports, grows less unfavorable, as at that time imports dropped to 39,083 tons. The seven-month total, however, 269,284 tons, compares with a 1930 seven-month total of 339,605 tons. Exports to July 31 this year were down about 50 per cent to 646,008 tons.

Rate of Coke Production Sustains More Drastic Cut in July

With an accelerated sharpness coke production continued on the downward trend in July. The aggregate production for the month was 2,644,626 tons, or 1,340,000 tons less than in July last year. By-product output was 2,568,-726 and beehive, establishing another new low, 75,900 tons. In terms of the daily rate by-product coke production was down 8.4 per cent and beehive was off 13.1 per cent. Stocks of by-product were up 8.9 per cent, to 3,545,668 tons, the sixth consecutive gain. Principal accumulations were at nonfurnace plants. Production of beehive coke for the year to July 31 was 840,900 tons, compared with 1,941,800 tons in the same 1930 period. By-product output was down from 28,829,823 tons to 20,802,268.

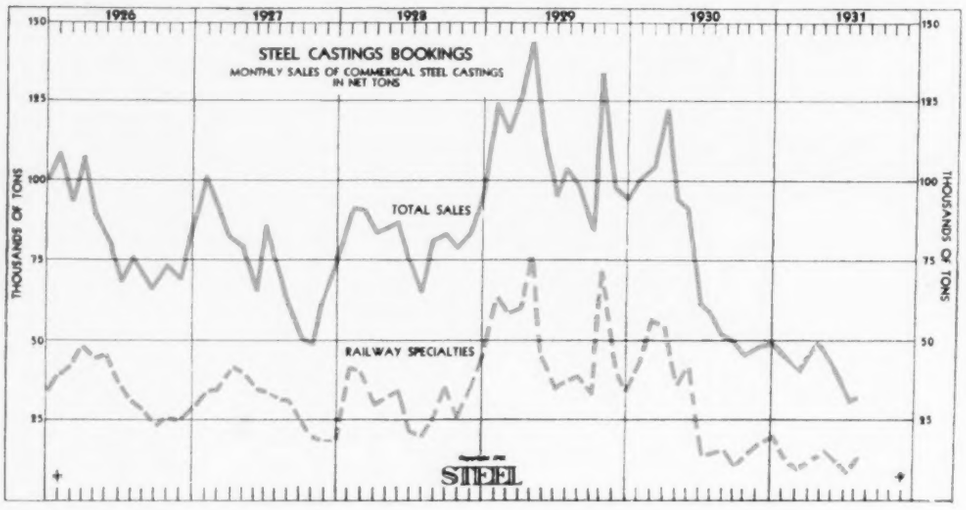


By-Product

	Tons
July, 1931	2,568,726
June, 1931	2,715,173
July, 1930	3,770,426

Beehive

July, 1931	75,900
June, 1931	87,300
July, 1930	214,600



Total New Bookings

	Tons
July, 1931	32,655
June, 1931	26,136
July, 1930	57,856

Railway Specialties

	Tons
July, 1931	13,621
June, 1930	7,597
July, 1930	14,710

Gain in Bookings of Steel Castings Is Due Chiefly to Railway Orders

For the first time since last March total steel castings bookings gained, as July orders were pushed upward principally by new buying of railway specialties. Total bookings were for 32,655 tons, compared with 26,136 tons in June. The ratio to capacity advanced from 18 per cent to 22.4 per cent, but still the rate was lower than in any of the first five months of the year. Orders for railway specialties jumped from 7597 tons to 13,621 tons, the best total since last April. A smaller gain was made in miscellaneous castings, from 18,539 to 19,034 tons. Production in both classes continued downward and the excess of production over orders in July was less than at any time since last January.

Structural Steel Awards Drop Back But Shipments Are Best in 1931

Structural steel fabricators booked 159,200 tons in July. Orders were off 10.1 per cent from June, when the tonnage was 177,200, and 44.6 per cent from July a year ago, when the tonnage was 270,000. The ratio of orders to capacity dropped from 44.3 per cent in June to 39.8 per cent in July. May was the low point of the year to date, at 38.2 per cent of capacity. Shipments during July mounted to 181,600 tons, the best total thus far in 1931. At 45.4 per cent of capacity, they were, however, markedly below the rate in July, 1930, 68.7 per cent. In the first seven months of the year orders totaled 1,287,200 tons, compared with bookings for 1,768,800 tons in the like period of last year.

	Tons	
	1931	1930
July	159,200	270,000
June	177,200	253,600
May	152,800	279,200
April	292,800	222,800
March	184,100	236,800

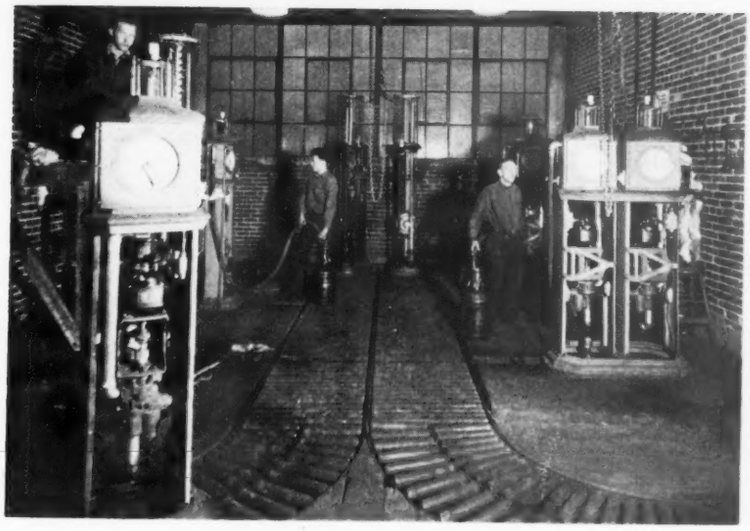


Fig. 1—After inspection, each pump undergoes a test for pumping capacity and accuracy

The units are delivered to and removed from the test floor by the roller conveyors shown

Modern Conveyor System Speeds Up Gasoline Pump Production

MANUFACTURING plants engaged in quantity production usually find that efficient materials handling devices are most effective in speeding up production and lowering costs. Included in equipment which may be found employed in the modern plant for this purpose are cranes, hoists, monorail systems, conveyors, elevators, trucks and tractors, skids, tote boxes and innumerable special handling mechanisms. No two plants are exactly alike and seldom make a similar product in the same way, therefore, special application of well-established engineering principles is required in the choice of proper materials handling equipment.

Within recent years conveyors have assumed a prominent position in mechanization programs and today these units can be built to meet almost every condition encountered. These devices, because they can be designed to fit

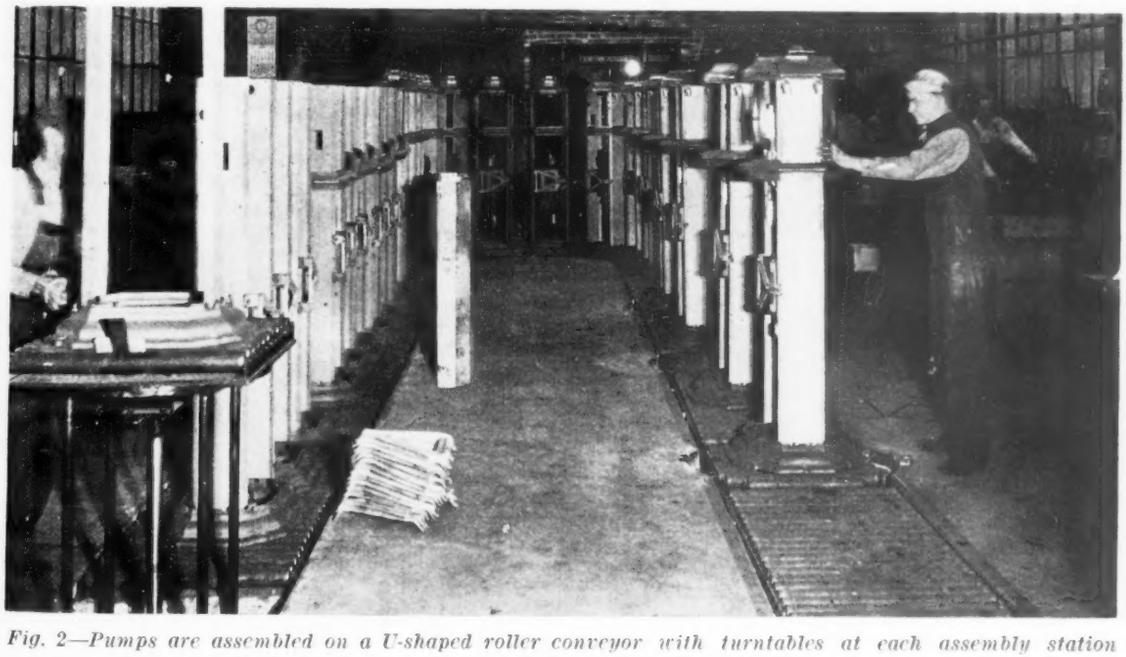


Fig. 2—Pumps are assembled on a U-shaped roller conveyor with turntables at each assembly station

particular needs, are doing much to systematize production.

Among recent conveyor installations of interest is one in the plant of the Pennsylvania Pump Co., Pittsburgh, where each year are manufactured thousands of gasoline pumps for service stations and garages. Here production has been put on a basis that assures speedy and economical production.

The system is an intelligent application of conveyors to handle the product from the first assembly operations through to the shipping department. Work progresses in orderly style, one operation following another without delay as the conveyor carries the work on toward its final destination. A workman finishes his job on one pump and it passes along to the next workman, in the meantime, another pump has taken the place of the first.

System Serves as Pace Setter

As a pace setter and economizer, the conveyor system has accomplished what would have been impossible with ordinary handling methods. As shown in the accompanying illustrations, the whole system is set at floor level and runs in a U-shaped path down one side of the assembly building and back on the other side.

At the start of the conveyor line there is installed, sunk in a pit, an air lift having a roller conveyor section as its top. This is to be seen at the extreme left in Fig. 2. When raised, this lift stops at a level about waist high and a workman places on the rollers a large casting which is the base of the pump. Next he attaches the vertical side pieces to the base, then by means of a foot pedal he permits the hoist to descend. At its lowest point, the hoist has its rollers aligned with those of the assembly line, so that the pump can be moved off onto the main line.

Assembly on Turntables

Every few feet along the assembly line of the roller conveyor, a roller conveyor turntable is installed, also shown in Fig. 2, and on these tables the assembly operations are carried out. A pump moves onto a turntable which is lined up with the fixed conveyor, then by pressure on a foot pedal, the operator releases the lock and turns the table into the position affording greatest ease in the next step of assembly.

With this operation completed, the workman returns the table to its original position and the pump moves down the conveyor to the next station. Thus the assembly progresses around the U-shaped conveyor line, starting with bases and ending with finished pumps.

At the end of the assembly line, the pumps continue on the conveyor to the inspection department, where careful attention is given to each unit. Here a roller conveyor frog section is fixed into the main line so that any defective assembles can be shunted off quickly. This feature has been found to be unusually effective as it eliminates any need for holding up the flow of production while defective units are removed from the line.

From this department the conveyor carries the pumps on to the testing floors, shown in Fig. 1, where by means of special testing equipment, the pumping capacity of each unit is measured. This test must show each pump capable of a predetermined number of gallons per minute and failure to measure up to the standard requires that the pump be returned to the assembly department.

After the pumps have passed all performance tests, they move on down the conveyor line to the finishing department where they are painted. First, each unit is given a flat coat, later they are moved on to the paint spray booths, shown in Fig. 3, where the finishing coat is applied. The booths, as is to be noted from the illustration, are equipped with roller conveyor turntables similar to those in the assembly line, and these enable the operators to rotate the pumps as necessary to apply paint to all surfaces. Conveniently located foot pedals make it possible to hold the table in any position required.

From this point the pumps are moved off to the shipping department where they are packed and crated carefully.

Operations in the Pennsylvania plant afford a good example of how production can be systematized by the application of conveyors properly engineered to fit the product. The system was designed and installed by the Mathews Conveyor Co., Ellwood City, Pa.

Fig. 3—Paint spray booths also are served by a roller conveyor. Spraying is simplified by means of roller turntables built into the line, these permitting the pumps to be rotated as desired

Engineers Salaries Reach Peak at Age of 55

Earning power of the typical mechanical engineer is greatest at the age of 55, according to a survey conducted by the American Society of Mechanical Engineers, New York. A report of this survey reveals that the maximum professional income of one-half of the engineers of the country who were at this age in 1930 was $7600. A fourth of this group earned $12,500 and one-tenth more than $25,000. Salaries are lowest in the Far West and highest in New York.

Engineering earnings do not decline seriously with age, said the report, prepared by the society's commitee on the economic status of the engineer under the direction of Prof. E. D. Smith, of Yale university. The statistical computation was directed by Prof. H. B. Hastings, also of Yale.

Managers, consultants and teachers show little falling off in old age, but designers, research men and technical operating men show an age drop after 50. The findings are based on 1930 earnings as reported by 9199 mechanical engineers. At that time, it was explained, the effects of the present depression had not seriously affected professional salaries and few salary cuts had been made.

Standardization Aids Russia's Program of Industrialism

RUSSIAN rolling mills formerly produced a great number of metallic shapes and sections. Before the revolution, 4742 of them existed—products of competition and designers' tricks. The mills had to be stopped once in 24 hours for about 4 hours to have the rolls changed entailing a waste of one-sixth the time. Through the standardization of shapes (U. S. S. R. Standards OST 8-31) the number of shapes and sections was reduced to 715, or less than one-sixth of the original number.

This made it necessary to stop the mills only once per week on the average, and as a result the productivity of the rolling mills of the Union was increased by 16 per cent. The program for 1931 requires an output of 6,700,000 tons of rolled metal, consequently, through standardization, 1,000,000 tons additional can be made.

Specialization Is Permitted

It should be noted that the economic significance of the results achieved is not limited to an increase in production, with lower costs. Standardization creates a new, technically-organized system of production, making possible the concentrating of the production of rolled products, with specialization on definite types and sizes. This is reflected in a reduction in stocks both at plants and at warehouses. As a consequence, funds formerly tied up in stocks are released for use in production.

At the Moscow mill "Serp i Molot" ("Sickle and Hammer"), owing to the standardization of rolling, the daily output has risen from 111 to 198 tons, or 80 per cent increase in large sizes; from 32 to 67 tons, or 110 per cent increase in medium sizes; and from 37 to 73 tons or nearly 100 per cent in small sizes.

In April, 1930, the standardization committee introduced into practice "Unified Standards of Structural Design." The unified standards prescribed new specifications for the construction of buildings, reduction in area, decrease in useless height, etc.; they raised the allowable stresses of iron, lumber, metals, cement, timber; and they reduced dimensions and weights of walls, roofs, and foundations. The new standards of design eliminate the useless margin of strength, utilizing more rationally the properties of building materials.

In applying the new specifications to housing construction and the erection of educational and public health buildings and warehouses, the new standards will effect an economy of some 3 per cent. In agricultural construction, the new standards will bring about a reduction of about 5 per cent in cost; industrial construction costs will be reduced by 1 per cent. On the basis of these figures, it is estimated that the savings in building construction will amount to 300,000,000 rubles (approximately $150,000,000) for the period of the five-year plan.

In bridge construction, the reduction in metallic materials due to an increase in allowable working stresses will amount to 6 per cent, or 25,000 tons, for the period of the five-year plan. The reduction in the dimensions of beams used in industrial building will save about 3 per cent, or 72,000 tons of metal; similarly, 3.6 per cent, or 170,000 tons, will be saved in reinforcing steel for concrete buildings.

The total saving will amount to 270,000 tons of metal valued at 70,000,000 rubles (approximately $35,000,000). The increase in allowable stresses of lumber and timber will result in savings of 6 per cent, or 100,000,000 rubles (approximately $50,000,000). Likewise, saving in dimensions of concrete structures will reduce costs by 15,000,000 rubles (approximately $7,500,000) in 1931.

The various items of economy will bring about an over-all reduction of 3 per cent in total cost of construction. Considering construction statistics for 1931, and assuming an undiminished tempo of construction for 1932, the total saving due to the application of unified standards of structural design promises to reach the sum of 850,000,000 (about $425,000,000) to 900,000,000 rubles ($450,000,000), or a daily reduction in waste equal to 2,500,000 rubles (about $1,250,000).

Quality Also Is Standard

When scientific research sets certain limiting values for the properties of materials, the basic assumption is made that these materials are strictly homogeneous or standardized. If the quality standards of materials are maintained in production, a still greater economy in their use may be expected, since uniform quality insures greater strength and will allow further progress in establishing more perfect standards of structural design.

At present, the standardization committee is about to complete a more rigorous set of uniform standards, based on scientific considerations, which will be introduced in the obligatory curriculum of the higher technical schools of the country.

At the end of 1930, the standardization committee approved a standard on the ash content of coking coal (U. S. S. R. Standard OST 2575). By this standard the ash content of coal should be reduced to 2 per cent below the average for 1930. This will result in setting free about 60,000 freight cars, and an increase of 500,000 tons in the production of the metallurgical plants of the union without the least increase in expenditure.

The increase in production noted above is due to the fact that an extra ash content of 1 per cent in coal will reduce the output of blast furnaces by 2.5 per cent, which would thus re-

RUSSIA'S standardization and elimination of waste program should be of special interest to engineers in the United States because of the great differences between Russian and American standardization principles. An article by D. G. Budnevich, vice president of the United States of Soviet Russia Standardization committee, appearing in the March, 1931, issue of Vestnik Standartizatziyi, cited advantages of a planned socialist economic organization in setting up and promulgating industrial standards. Frequent reference was made to the importance of participation of workers in the movement. The accompanying presentation, dealing with the steel and metalworking industries, is a portion of an abstract of the original article translated by I. Gutmann, Engineering Index Service, New York, and published in the June Bulletin of the American Standards association, New York. STEEL, in its issue of July 16, Page 27, reviewed this article briefly.

sult in a production loss of 280,000 tons of metal for each 1 per cent of extra ash content.

At present the local press has undertaken a political campaign among the Donbass and Kuzbass coal miners for the purpose of creating a sympathetic movement, for the purpose of further decreasing the ash content. The paper *Pravda* has assumed leadership in this matter. The Supreme State Inspectorate, which is under the jurisdiction of the Standardization committee, is in charge of enforcement of ash content standards.

Simplification and standardization of window and door sashes, together with substitution of steel for imported brass, has resulted in a saving of 300 tons of brass and 1000 tons of steel, or a total of 4,000,000 rubles ($2,000,000) for 1931. It is also to be noted that prior to standardization (U. S. S. R. Standards OST 2498-2511) there were nearly 300 types of window and door sashes; at present only 30 types are recognized.

Apropos of this it may be mentioned that the standards issued have not done justice to all the possible engineering improvements and innovations in this line. It has, therefore been found advisable to attract inventive talent by announcing a competition for best designs.

Savings Made in Abrasives

Recently, 340 types of grinding disks and abrasive implements were approved in Standards OST 2619 and 2632. In the past there were 4040 of them. The value of annual production in this line for 1932 has been estimated at nearly 60,000,000 rubles ($30,000,000). The standard, having reduced the number of types to one-twelfth of the former number, has lowered cost of production by from 5 to 6 per cent, which will result in a saving of 3,000,000 rubles ($1,500,000) in this branch of industry. Along with this reduction in number of types, there has been introduced a new heat treatment process which insures qualitative uniformity of abrasive industry products.

In some cases, a standard improving the quality of a product may raise its cost of production, but, on the other hand, it will give longer service and will bring about a more rational utilization of the raw material, thereby achieving the ultimate aim of standardization — national economy. This economy may manifest itself in a different sector of industry. In this Russia differs radically from the capitalist system where the profits of standardization are sought within the same concern and the same undertaking, no further.

Quality is to be planned by means of standards establishing and fixing such qualitative properties, for poor quality is waste and must be combated along broad lines.

It is quite apparent and irrefutable that standardization conforming to the socialistic development of the Union must become the technology of socialistic construction and be a component of our technological policy. Indisputably, standardization as a principle and a guide to action, being a bridge to large-scale socialistic production, must become one of the cornerstones of technical progress.

By the end of 1931 Russian industries will be standardized to the following extent:

	Per cent
Coal mining	100
Petroleum industry	61.3
Metal mining	60
Ferrous metallurgy	75.5
Nonferrous metallurgy	70
Chemical industry	74.6
Building materials	91
Machine construction	28.7

The metal and chemical industries have led in Russian standardization work. In the period, May 7, 1926, to March 1, 1931, the standardization committee has approved the following standards:

Electric industry, 30; metals, 914; thermopower, 3; mining, 28; chemical, 231; building materials, 30; ceramic, 66; woodworking, 24; paper, 26; printing, 32; transportation and communication, 14; construction, 111; textile, 79; underclothing and haberdashery, 114; fur and leather, 105; foods and condiments, 150; agriculture, 248; educational and miscellaneous, 37, making a total of 2242.

Russia is on the eve of the development of a general plan of a Soviet socialist economic structure and, as Comrade Krzhizhanovsky said, "the first pages must be written by standardization experts."

Undoubtedly, with the aid of standardization, the country will take from the arsenal of latest capitalistic technology all of the best that it created in the province of manufacture; furthermore, the people shall advance toward the creation of their own technology—the technology of the land of socialism.

In conclusion, the author comments on the Russian standardization program as follows:

"Our standardization committee must fill the function of an organizing center for a mass movement for the reorganization of production and for combating waste by means of planned standardization. This requires . . . propaganda through the press and the moving picture, lectures, scientific demonstrations, and object lessons given at the plants to demonstrate the possibilities of standardization and its applicability to specific problems.

"We need placards, exhibitions, slogans—short and impressive. This work should not be conducted in the form of campaigns, but as daily routine persistently struggling for results. . . . Let us remember that nature does not know of any classless, nonpolitical 'pure' science or technology. It is important to decide to what extent we may rely on standards created and introduced by capitalism when we transplant foreign technology in our country.

"There is no disputing the fact that we must introduce models of foreign technology, so long as we have not outstripped the technical successes of capitalism. It does not follow, however, that in transplanting the methods of standardization in our socialistic industry, we must proceed in the fashion characteristic of capitalism.

Industrial Standards Favored

"In capitalistic practice we must distinguish between standards for individual undertakings belonging to one single trust or firm and standards of a national character. The first are a product of the will and organization of one definite industrial group or combine; the second are a result of agreement among various competing groups. We should much rather adopt the standards of trusts and firms, because they reflect best the conquests of progressive engineering; but here we shall invariably clash with monopolies, patents, secretiveness. Automatic adoption of national standards of other countries must be resolutely objected to, because, as a general rule, they have originated from agreement-making and a desire to find a resultant of opposing and conflicting interests.

"We have no such contradictory conditions; all of our industry in all its subdivisions belongs to the socialistic state and no one else. Owing to our blind following of those abroad, there has thrived among us a most obnoxious notion that since a standard requires a preliminary agreement we must not prepare a standardization plan nor a plan of scientific research. . . . While we were trying to orient ourselves with reference to bourgeois theory and practice of standardization, our tempo of promulgation of standards was exceptionally slow. In 1926-27, 125 all-Russia standards were approved; in 1927-28, 221; in 1928-29, 378; and in 1929-30, 1234. The abrupt rise took place in the last year, after we freed ourselves from the idea that a standard must be the product of lengthy negotiations.

"We must state, however, that we do not at all deny the principle of agreement, but this principle has with us a different basis and a different significance—a different social meaning. With us the harmonization and standardization projects unify the social interests in individual branches of our economic structure, and the approval of a standard by the standardization committee is a synthesis—a summation—of the socially useful requirements of production and consumption.

"Our system of harmonization is deep and wide; we have attracted the whole mass of workers to the business of governing the state, and a standard which passes the inspection of the masses, and their criti-

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cism is one of the modes of participation of the workers in the government of the economic structure of the Soviet Union.

"Our following, for a certain period and to a certain extent, in the methodological path of Western European and North American national industrial standardization was merely a matter of noncritical, unquestioning genuflexion before the customs of foreign lands. . . .

"We are bound to have our own methodological forms which must reveal the principles of soviet standardization in opposition to those noncritical strata in our standardization practice which were copied from a bourgeois milieu in spite of its infinite remoteness from our actuality.

"Both Western Europe and America—in fact, the whole capitalist world—seeks to find in standardization a means for successful competition of individual capitalists and capitalist combines with one another, and of individual states among themselves. . . .

"Even the far-famed specialization and co-operation of production in capitalism originate in the desire to annihilate the small competitor, and for this purpose standardization and mass production are effective means. . . .

"American practicality, to which self-deception would seem least becoming, advances 'harmonization of interests' as a stimulus for the adoption of standards—but how can these be thought of where there are classes with opposing, mutually-exclusive interests, where means and tools of production are private property, where national standards are contingent upon an agreement between fighting entrepreneurs.

"Our standards will never be mere splinters of the national forms of foreign countries, but will be a product of the creativeness of many millions, of the whole collective group of workers. . . ."

Foundry Devises Economical Plan for Cutting Larger Risers

AFTER the foundry of a steel mill near Chicago poured the melt of a recent order for several roll castings of 0.65 per cent carbon steel, it was confronted with the task of removing the risers, which of necessity were almost as large as the castings themselves. Before cutting, each casting was about 8 feet long and 5 feet in diameter with a 2-foot core. The riser was approximately half of this mass, the diameter of the riser being slightly less than that of the the roll, due to an offset of 2½-inches at the neck. This required a cut of about 19 linear feet through metal 1½-feet thick.

Oxyacetylene Consumption High

To augment the cutting problem a service operator who was called in for consultation, found that the first riser of this type had necessitated the consumption of 25 cylinders of oxygen and two of acetylene.

To solve the problem the casting was set up as shown in the accompanying illustration and an oxygen lance was employed in conjunction with the blowpipe. A manifold for the oxygen cylinders was provided and several lengths of ⅛-inch pipe constituted the lance. Asbestos paper was used as a covering for the casting to retain the heat, thus making the cutting easier. Asbestos paper also was placed inside the casting where the core was removed.

After drilling a hole near the neck with the oxygen lance, cutting with the aid of the blowpipe progressed for two hours. The entire job took only about 3½ hours, including the time for cleaning the neck of the riser and for moving the casting about with a crane to put it in the correct position for cutting. This riser was removed with a saving in gases. Only 18 cylinders of oxygen and half a cylinder of acetylene were required. In cutting the third riser the consumption of oxygen was reduced to 9½ cylinders.

Fig. 1—(Above)—Cutting the riser aided by an oxygen lance. Fig. 2—(Right)—Casting ready to have the riser removed

Convention Calendar

Sept. 6-12—International Association for Testing Materials. First congress at Swiss Federal Polytechnicum, Zurich, Switzerland. W. H. Fulweiler, United Gas Improvement Co., Philadelphia, is A. S. T. M. permanent committee representative.

Sept. 13-18—Institute of Metals. Fall meeting in Zurich, Switzerland. G. Shaw Scott, 36 Victoria street, London, S.W.1, England, is secretary.

Sept. 17—Steel Founders' Society of America. First fall meeting in Chicago. Granville P. Rogers, 932 Graybar building, New York, is managing director.

Sept. 17-18—American Gas association. Meeting of manufacturers' section in Book-Cadillac hotel, Detroit. C. W. Berghorn, 420 Lexington avenue, New York.

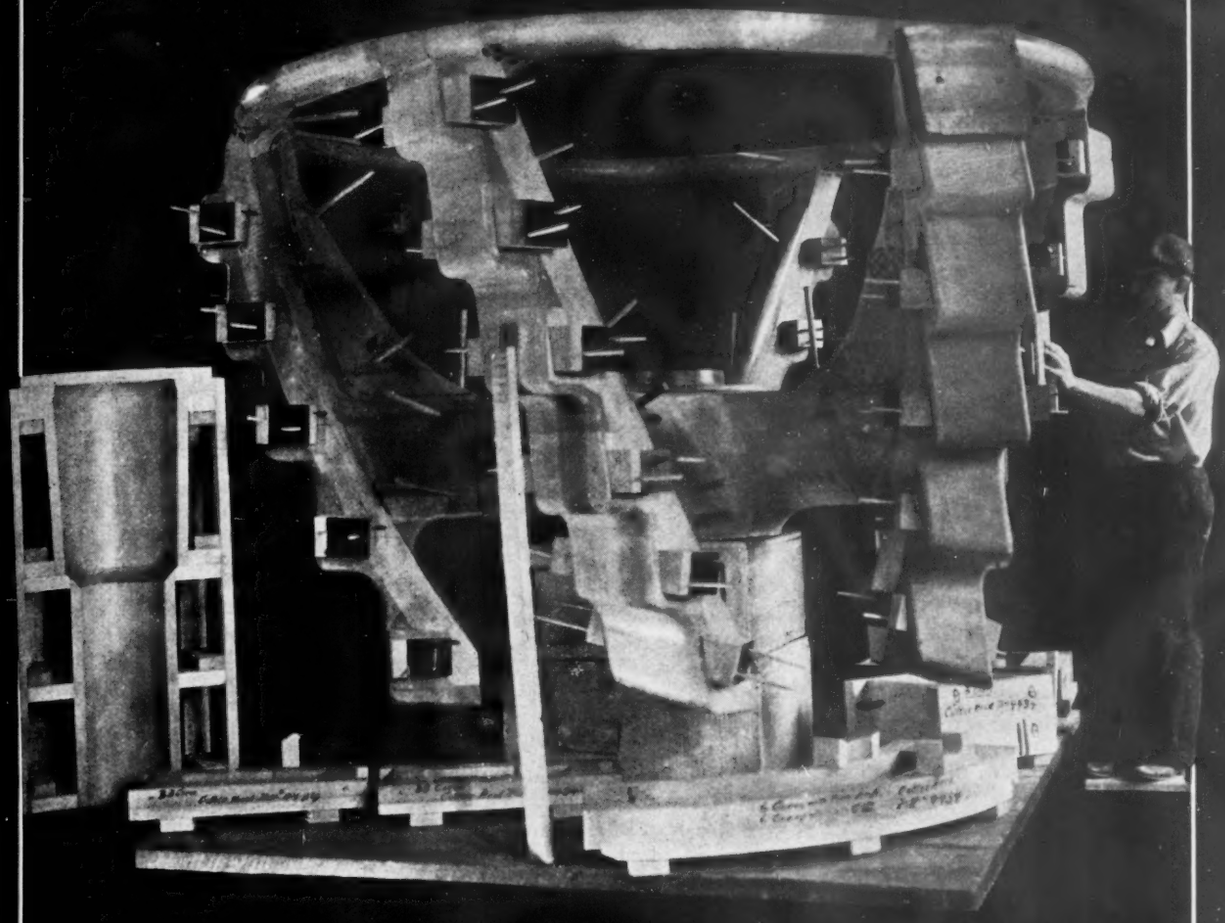
Sept. 21-25—American Society for Steel Treating. National Metal congress and exposition at Hotel Statler, Boston. W. H. Eisenman, 7016 Euclid Avenue, Cleveland, is secretary.

Sept. 21-25—American Welding society. Fall meeting at Copley-Plaza hotel, Boston. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Sept. 21-25—American Society of Mechanical Engineers. Meetings of iron and steel and machine shop practice divisions at Hotel Statler, Boston. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Sept. 21-25—American Institute of Mining and Metallurgical Engineers. Meetings of iron and steel and institute of metals divisions at Hotel Statler, Boston. Dr. H. Foster Bain, 29 West Thirty-ninth street, New York, is secretary.

Sept. 28-30—Concrete Reinforcing Steel institute. Semiannual convention, Buckwood Inn, Shawnee-on-Delaware, Pa. M. A. Beeman, 2112 Tribune Tower, Chicago, is secretary.



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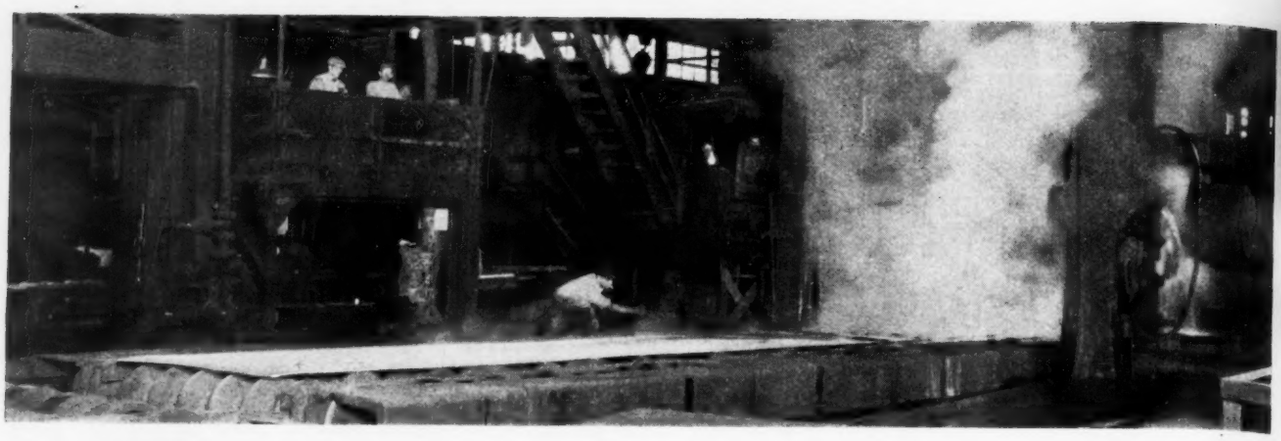


PROGRESS IN STEELMAKING

STEEL mill electrical engineers are giving attention to a method of lubrication which has been applied of late to locomotives and other rolling stock. There is a spring-lever with a weight on the free end. As the locomotive travels along the tracks, the jolts cause the weight to succumb to the attraction of gravity. The action is that of a plunger which develops sufficient force to apply grease to the bearings under pressure of about 300 pounds. Steel mill men believe this method can be employed for lubricating cranes and other equipment.

MORE and more, steel production men share the sales viewpoint. Asked what phase of his responsibilities concerned him most, the general superintendent of a large steel plant replied, "My chief interest is in keeping customers satisfied."

♦ ♦ ♦

A sheet mill recently installed a continuous oil burning heating furnace which takes the place of three hand heating furnaces. The change is saving the labor of six men per shift.

♦ ♦ ♦

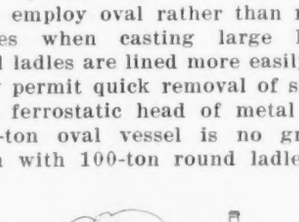
Long open-hearth furnace campaigns with high-tonnage output and low fuel consumption are being obtained by the Steel Co. of Canada where coke oven and blast furnace gases are being used. The practice is to employ a flame which hugs the bath and transfers its heat to the metal by convection and by direct contact with the slag. So complete is the combustion that when a heat is ready to be tapped, the brick in the backwall and roof can be discerned clearly. Low fuel consumption has become an actuality.

♦ ♦ ♦

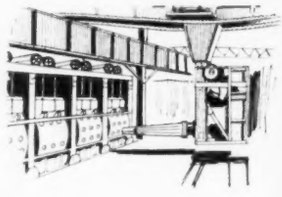
Certain alloys, which up to recently have been welded into tubes, now are being made in seamless tubes. One of these is the alloy NCT3, composed of 25 per cent chrome, 21 per cent nickel and 0.30 carbon, and used largely in hydrogenation work. Whereas the piercing of 18 and 8 chrome-nickel alloy requires two and one-quarter times the power expended in piercing plain carbon steel, NCT3 alloy requires five times the power for piercing plain carbon steel. Experience shows that NCT3 can be pierced successfully only when at a point within 25 degrees of the correct temperature, so that in working with this alloy highly dependable instruments are required.

♦ ♦ ♦

Many basic open-hearth furnaces now employ oval rather than round ladles when casting large heats. Oval ladles are lined more easily and they permit quick removal of skulls. The ferrostatic head of metal in a 140-ton oval vessel is no greater than with 100-ton round ladles.



TWO blast furnace superintendents in this country are operating their steelworks stacks to conform to curtailed requirements of the steelmaking department. Each Friday night the blowpipes are dropped, the tuyeres clayed up and the cast house crew, blower and stove tender sent home with orders to report the following Monday morning. The water tender stays on the job to look after the cooling system. Within an hour after the crew returns at the first of the week the clay is raked out of the tuyere openings, blowpipes are keyed in position and blast is applied. The first cast Monday morning seldom varies from the 1.25 per cent silicon requirement. The result is a saving in labor and in the cost of running the week-end melt through the pig machine and cupola. Blast furnaces being operated on a 5-day week. What would the old-timers think of this procedure?



BLAST furnace gas alone will be used for the slab reheating furnaces which are to serve a continuous plate mill now nearing completion. A system of regenerators will assist in bringing the steel up to the rolling temperature.

♦ ♦ ♦

A large steel company recently equipped the charging floor in front of two of its open-hearth furnaces with battledeck flooring welded together.

♦ ♦ ♦

Savings in scrap loss and labor have been effected by the Colorado Fuel & Iron Co. by the installation of what is said to be the only continuous wire mill layout in this country. Four single bull blocks and two doubledeck drawing blocks effect all single draft work and a portion of the doubledraft work. Other portions of the work are executed by 3, 4, 5 and 6-draft units.

THE FACTS

ul grinding of concaved or crowned rolls

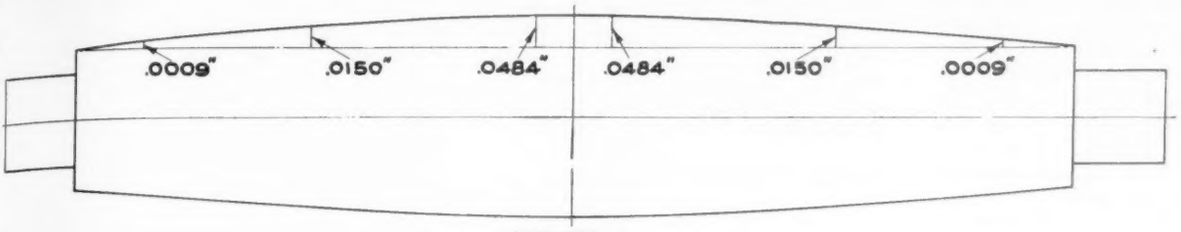


FIGURE 1.

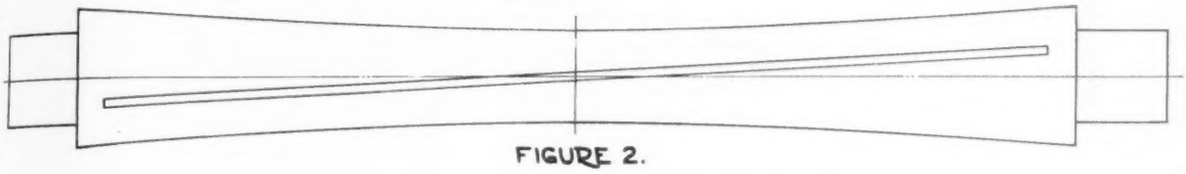


FIGURE 2.

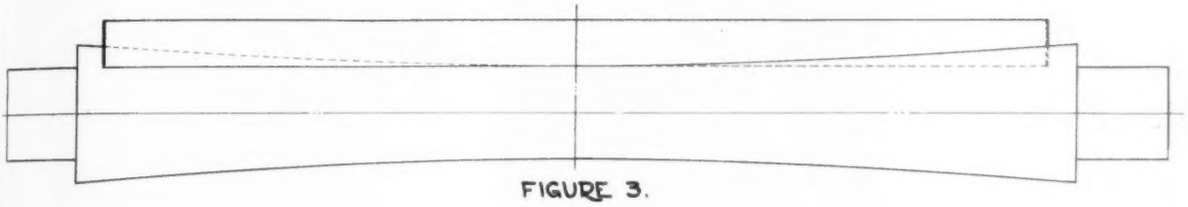
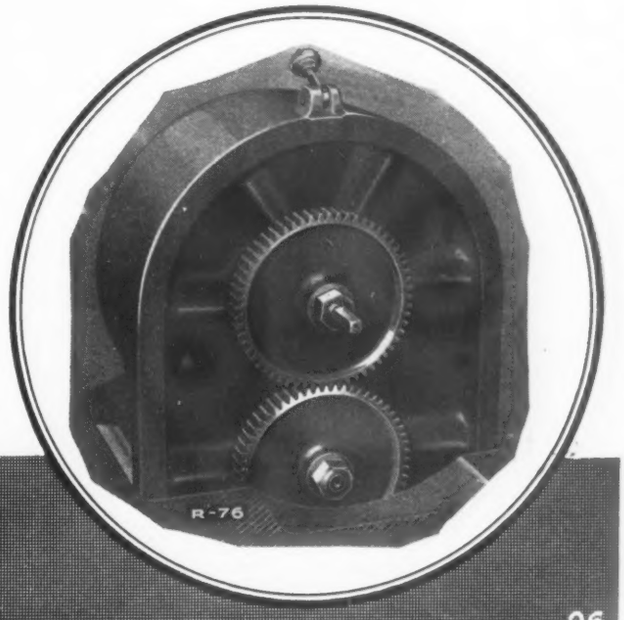


FIGURE 3.

To portray clearly the three things that the ideal concaving and crowning mechanism will do, we wish to bring to your attention the drawings above.

Figure 1 shows a crowned roll with the amount of crown indicated at the same intervals either side of the vertical center line. Plainly the contour is exactly the same on either side. The result is symmetry. Figure 2 shows a concaved roll. The amount of concavity is exactly the same in this roll as the amount of crown in the roll previously referred to. The same amount of eccentricity in the concaving and crowning mechanism would produce this result. Figure 3 shows a concaved roll with a straight edge superimposed, thus showing in the best way possible that the contour is in the form of a straight edge across. Figure 2 includes a plan view of the straight edge.

These drawings are, of necessity, exaggerated in their proportions to better illustrate the points in question although the measurements given with Figure 1 are the result of actual tests. Altogether they depict clearly what you should expect from the concaving and crowning mechanism which will be a part of the next roll grinder you purchase.



WAYNESBORO PA., U.S.A.

96

Large Uses of Steel In Small Ways

199th Article — Bed Springs

IF EACH person in the United States had an individual spring bed the nation would be sleeping on approximately 3,250,000 tons of steel—the amount that would be required to manufacture a sufficient number of bed springs for the entire population. And even though there may not be a bed for every man, woman and child, it is likely that more than the above figure—equal to nearly the total annual output of rolled steel in the country 40 years ago—is represented in the amount of steel that has gone into the manufacture of bed springs since the time this aid to restful repose was devised.

The average bed spring is made of angles, strips, wire and wire coils and fastening parts. A typical spring for a double bed is shown in the accompanying illustration. It is 54 inches wide, 73 inches long and weighs about 73 pounds. Into its manufacture go 21 pounds of steel angles, 16 pounds of steel strip, 34 pounds of wire, including coils, 1 pound of clips and ½-pound of rivets.

Spring Supported by Angles

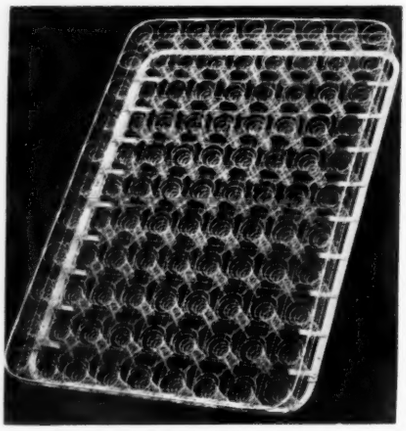
The angles are 1½-inch in size and ⅛-inch thick, and provide the frame for the bed spring. Flat steel is 1-inch, 11-gage hot-rolled strip and forms cross pieces that support the large wire coils. These pieces usually are fastened to the frame by rivets, welding being employed in some instances.

The wire coils, made of 11 or 12 gage spring wire, are held in position by cross helical springs. Outside coils are fastened to a border wire by clips, and the entire construction is strengthened further by the interweaving of lengths of cross tie wire halfway between the top and bottom of the coils. This design prevents side movement of the coils without interferring with their compressive action. The border wire is size No. 0 and the cross tie wire No. 14.

Most bed spring designs are similar to the above, varying possibly in the method of supporting the coils. Less expensive types use lighter sections. Springs for single beds are of the same length as for double beds but are about 15 inches narrower and weigh around 50 pounds. Relative production of the two sizes varies over the country, the output of double bed springs outnumbering the single two to one in some sections, and in others being more nearly equal to the smaller size.

Simplified Practice Nets Large Annual Savings

In the first half of 1931, fifteen general conferences were held to consider and approve as many new simplified practice recommendations. This total exceeds by four the number of general conferences held in all of 1930, and closely approaches the total for 1929. These facts are revealed in a news letter issued by the division of simplified practice, department of commerce, Washington.



This standard size bed spring weighs 73 pounds, all its parts of steel

More than 10,000 different associations and companies are listed as acceptors of the 117 simplified practice recommendations now in effect. The total number of acceptances recorded for all recommendations is approximately 30,000. Most remarkable about this steady rise in number during the past 10 years is the increasing interest shown by consumers of the commodities simplified.

Savings due to the adherence to simplified practice recommendations, according to responsible sources in the various affected industries, total more than 250 million dollars a year. Individual companies have reported that they are saving thousands of dollars annually.

Among new and revised recommendations printed in the period March-June was R-94-30 on steel joists specifying properties and allowable loads in pounds per lineal foot for joists between 8 and 16 inches in depth and not longer than 24 times their depth. It includes the necessary designations, stresses, resisting moments in inch-pounds, and maximum end reaction in pounds.

Another, R-95-30 on skid platforms establishes the height of the under side of platform above bottom of runners or other supports and in addition gives overall dimensions for the two standard sizes selected. Copies of the steel joist and skid platform recommendations can be purchased for 5 cents each.

Among recommendations reaffirmed in the four months were: No. 100-29 on welded chain; No. 20-28 on steel barrels and drums; No. 28-29 on sheet steel; No. 29 on eaves trough and conductor pipe; No. 30-28 on roofing ternes; No. 47-28 on cut tacks and small cut nails; No. 78-28 on iron and steel roofing; and No. 90-29 on hacksaw blades.

Using Higher Voltages in Multistage X-Ray Tubes

Apparently there is no voltage too high for use in x-ray or cathode-ray work said Dr. W. D. Coolidge, associate director, research laboratory, General Electric Co., Schenectady, N. Y., recently in addressing members of the American Association for the Advancement of Science meeting in Pasadena, Calif. By cascading, or applying the total voltage in a series of steps any voltage that can be generated may be used.

A New York hospital has a two-section x-ray tube operating at 900,000 volts and 5 milliamperes of current; and a three-section cathode-ray tube operating at the same voltage has been made in the General Electric laboratory. Both of these tubes operate continuously at a voltage far higher than any attained in a single-section tube.

In the industrial field, it seems almost certain that such high-voltage x-ray equipment will be used for radiographic or x-ray examination of thick sections of metal, Dr. Coolidge stated.

The speaker predicted that, in the future, x-ray or cathode-ray tubes for extremely high voltages will be operated while immersed in the same oil with the high-voltage source, such as an induction coil, and with no portion of the high-voltage circuit exposed to the air. Such a tube can be smaller and there will be a great reduction in space occupied by the equipment. Elimination of electric hazard would be a further advantage.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Tool Steel

Tool steel from the consumer's standpoint, by H. G. Keshian in Metal Progress, August 1931, *p.* 46, 3 *pp.*, 1 *illust.*

Generally speaking steels for various tools are selected, at present, according to (1) tradition, (2) personal experience, (3) recommendation of steelmakers, and (4) service tests.

The designer of a machine has at his disposal a vast amount of data on the physical properties of many types of steels, or parts of his machine that are subject to wear, tension, compression or impact he can select steels that fulfill these requirements in various degrees. Similar information is available to the designer of a structure, automobile, vessel, locomotive, dirigible and airplane; but when it comes to tools the designer has only vague and meager information as to the properties of a thousand and one kinds of tool steel on the market, from which he must select his material for tools requiring different characteristics. It appears, therefore, worthy of serious consideration by both tool steel maker and the consumer to determine the requisite physical properties of tool steels and make them available to the designer of tools.

—STEEL, 9-3-31

Tungsten Carbide

Fundamental rules and instructions for applying tungsten-carbide tools based on practical experience, discussed by F. W. Curtis, in Machinery, August 1931, *p.* 938, 3 *pp.*, 4 *illusts.*

Tests should be conducted to determine the correct speeds and feeds, based upon the grade of finish desired and upon the life of the tool between grinds. For ordinary operations it is safe to increase the speed from two to four times that used for high-speed steel, and decrease slightly the feed per tooth, or per revolution, depending upon the nature of the cut. Inasmuch as tungsten-carbide tools will not stand sudden shock, it is recommended that at no time should the tool be stopped in the cut. Accurate tool grinding is important with any type of cutting material, and is equally important with tungsten carbide. The use of gages and templets is strongly recommended, because success depends largely on grinding. Tough and hard metals can be machined with tungsten carbide, which means that thinner castings can be designed with a strength equal to or exceeding that of the castings that are not used for the same purpose. Because of the high peripheral speeds that can be used with this alloy, it often is possible to produce a satisfactory finish in one cut, where two ordinarily are required. The author presents ten advantages of tungsten-carbide tools, based on actual shop operations.

—STEEL, 9-3-31

Enameling Costs

Means for reducing the costs of porcelain enameling, discussed by E. Hershey, in The Enamelist, August 1931, *p.* 10, 5 *pp.*, 1 *illust.*

If the management of the average sheet iron porcelain enameling plant would make a careful study of the component parts of its cost dollar the result would approximate 14 per cent for frit cost and 86 per cent for application cost, based on a delivered price of the frit of 7 cents a pound. An enameling plant's cost for processing will be high or low, according to how advantageously the various operations are performed. A control of processing, therefore, is one of the most speedy and permanent methods of realizing the savings hidden in the 80 to 85 cents which represents the part that application takes from the average cost dollar. The author discusses control specifications in detail including such places as mill room, pickling, ground coat dipping, burning, spraying, inspection, repair and scheduling of work.

—STEEL, 9-3-31

Electric Arc Furnaces

Twenty year advance in electric arc furnaces for the production of iron and steel, by W. E. Moore, presented at the sixtieth general meeting of the Electrochemical society, Sept. 2-5, *at Salt Lake City, Utah,* 13½ *pp., no illusts.*

In the past 20 years electric arc melting furnaces have registered notable progress, having increased in number 65 times, in maximum size per heat five times, in maximum daily capacity ten times. Power consumption per unit ton output has been decreased from 600-800 to 400-600 kilowatt hours, while carbon electrode consumption has decreased from 30-40 pounds to 8-15 pounds.

The total conversion cost on the output has been decreased correspondingly by reason of these improvements, as well as by reason of the more rapid type of operation, and the lower maintenance, refractory and slag costs. It is predicted that within the next two decades the modern rapid-type electric furnace will have displaced a large percentage of open-hearth furnace capacity in this country. In addition to this, the electric furnace probably will displace a large part of both the cupola gray iron capacity in iron foundries and the air furnace melting capacity in malleable iron and chilled iron foundries. The electric furnace seems destined to be one of the largest power consumers.

—STEEL, 9-3-31

High Pressure Boilers

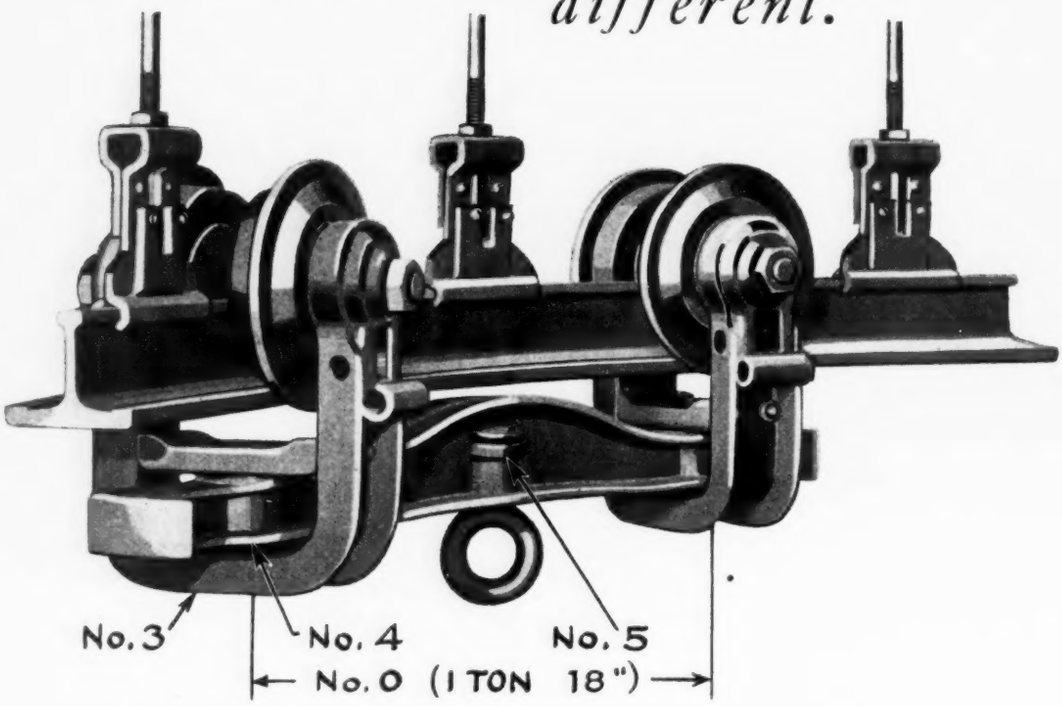
Successful management of modern boiler plants, discussed by W. F. Ryan, in Power, Aug. 25, 1931, *p.* 261, 3 *pp.*, 2 *illusts.*

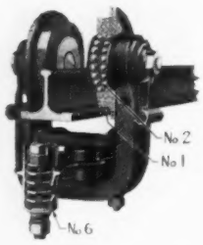
Calcium sulphate is the most troublesome scale forming salt in the majority of boiler feed waters. The modern plant never would have been practicable without the water-cooled furnace, the slag screen, and other additions to the radiant heat absorbing surface. These new developments simplified the maintenance of furnaces, but increased the importance of correct feed-water treatment. Corrosion may be occasioned by incorrect chemical treatment, but the presence of oxygen in water is a more common cause. The only way that serious corrosion can be avoided is first to maintain correct feed-water treatment, and then to deareate the feed water and to keep it deareated. It has been found that embrittlement can be entirely inhibited by correct chemical treatment of the boiler water. The operator should watch carefully the progress of swelling or sagging of the boiler tubes, and replace them before safe limits are exceeded. Fin tubes which check or crack also should be watched carefully, because cracks in the fins eventually may penetrate the walls of the tube.

—STEEL, 9-3-31

As

So certain principles of design—proven by pioneering research and years of experience—make Cleveland Tramrail Hand Operated Carriers different.





No. 0—All Tramrail carriers are built on the principle of a four wheel unit which, combined with the long wheelbase and swivel yokes, cause them to operate smoothly at all times, even around curves of short radius

No 1—The tread of the wheel is flat and chilled, and fits squarely on the rail.

No. 2—The inner section of the wheel is also cast in a chill, and the race is ground into this chill forming the outer races of the double ball bearing. Thirty-two ½" balls run on a hardened, ground inner race, and the chilled iron outer race. The outer race is tapered so dust cannot accumulate in the bearings, but will work itself out.

No 3—Swivel yokes keep the face of the wheel flanges against the side of the rail when operating around curves, eliminating any tendency of wheels to dig into the rail on the inside of the curve.

No. 4—The king pin is so constructed and fitted that it will absolutely prevent king pin failure.

No. 5—Swivel ball and socket fitting of the eye bolt into the load bar prevents crystallization.

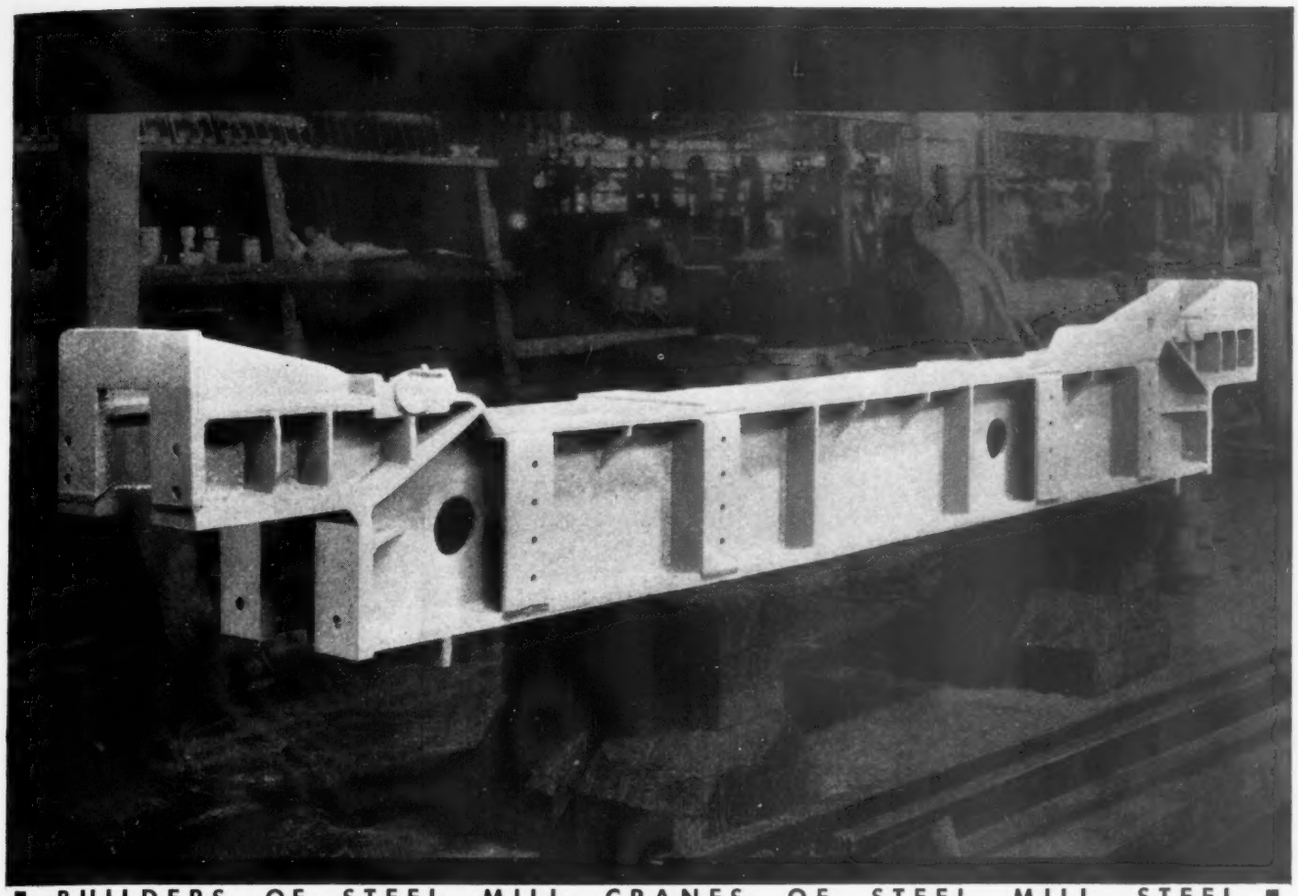
No. 6—Spring suspension for delicate loads when required.

There is a Thoroughly Trained Tramrail Engineer within a Short Distance from Your Door

There may be Real Advantages in making use of his services which are offered without obligation

Akron, Ohio	Cincinnati, Ohio	Fort Wayne, Ind (See Toledo)	Muskegon, Mich	San Francisco, Calif.
Albany, N. Y	Cleveland, Ohio	Hagerstown, Md.	Nashville, Tenn.	Seattle, Wash.
Atlanta, Ga.	Columbus, Ohio	Indianapolis, Ind	Newark, N. J.	Sheboygan, Wis.
Baltimore, Md	Dallas, Tex.	Jamestown, N. Y.	New Haven, Conn	Springfield, Mass. (See New Haven)
Birmingham, Ala.	Davenport, Iowa	Johnstown, Pa.	New Orleans, La	South Bend, Ind.
Boston, Mass.	Dayton, Ohio	Joliet, Ill. (See Rockford)	New York, N. Y.	St. Louis, Mo.
Brooklyn, N. Y.	Denver, Colo.	Kansas City, Mo.	Nutley, N. J.	Syracuse, N. Y
Buffalo, N.Y.	Detroit, Mich.	Knoxville, Tenn.	Peoria, Ill.	Toledo, Ohio
Camden, N. J. (See Trenton)	Duluth, Minn.	Los Angeles, Calif	Philadelphia, Pa	Trenton, N. J.
Charleston, W. Va	Easton, Pa.	Louisville, Ky.	Pittsburgh, Pa.	Tulsa, Okla
Charlotte, N. C.	East St. Louis, Ill (See St. Louis)	Memphis, Tenn.	Portland, Oregon	Worcester, Mass.
Chattanooga, Tenn.	Elizabeth, N. J.	Milwaukee, Wis.	Providence, R. I.	York, Pa.
Chicago, Ill.	Erie, Pa.	Minneapolis, Minn.	Richmond, Va.	Youngstown, Ohio
	Evansville, Ind.	Mobile, Ala.	Rochester, N. Y.	
			Rockford, Ill.	

CLEVELAND ELECTRIC TRAMRAIL DIVISION OF THE CLEVELAND CRANE & ENGINEERING CO. WICKLIFFE OHIO



■ BUILDERS OF STEEL MILL CRANES OF STEEL MILL STEEL ■

CLEVELAND welded rolled steel end trucks replaced cast steel end trucks which failed in service on a 10-ton, 100-ft. span, open hearth stock house crane of another make. Since 1926 Cleveland has placed in service more than 500 crane units of welded rolled steel construction.

THE CLEVELAND CRANE & ENGINEERING COMPANY, WICKLIFFE, OHIO

NEW YORK PITTSBURGH DETROIT CHICAGO

CLEVELAND CRANES

All Sizes for Every Service

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Machine Tool Evolution Is Reflected In Changing Marketing Methods

WHEN several leading machine tool builders almost simultaneously make sweeping changes in methods of sales and service, it is highly significant—though it may appear to a casual observer that some have adopted what others have abandoned. Disregarding the relative merits of dealer representation, of direct factory representation, or of a combination of both, one major fact stands out clearly. That is, that revolutionary changes in machine tool design have intensified the problem of machine tool sales and service—that they have in fact, made it a three-fold problem.

Neither from the engineering nor the economic standpoint is a modern machine tool in any way comparable to its simple, empirically designed and comparatively low priced predecessor of just a few years ago. The typical production machine tool of today is an intricate, co-ordinated assembly of refined mechanical, hydraulic, pneumatic and electrical units embodying the experience of engineers trained in all of these lines, plus experience of production experts and skilled mechanics.

Modern Salesman's Dual Role

To present effectively the production possibilities of a machine tool of this character to engineers concerned with high pressure production of precision metal products, demands far more than a glib tongue and ability to entertain generously. It demands sales engineering ability comparable to the ability of the engineers who designed the machine and of the mechanics who built it. But success in this direction now is far less than half the battle won.

Executives in the metal working industry lately have been developing keen and critical interest in the costly equipment which is demanded under highly competitive conditions. Unfamiliar as they may be with engineering details, they nevertheless demand convincing proof of the possibilities of any new machine tool as a profit making instrument before approving any requisition—no matter how thoroughly it may be vouched for by their operating men. Therefore before the corporate purse strings are loosened, a representative of the machine tool builder must convincingly interpret engineering features in terms of favorable economic facts impressive to executives.

Making Machines Sell Machines

Last but by no means least comes the problem of service. Granted that a sale is made, then the new machine must promptly be tooled up, adjusted, set up in the customer's plant, his men trained to operate it efficiently, and readjustments and repairs made from time to time. Only when all these requirements are met and maintained will the machine "stay sold," thereby acting as a "silent salesman" to the desirable end that batteries of the same make of machine eventually will be installed. To insure all this, the service man of today must be an all around expert, a skilled and resourceful mechanic, and something of a diplomat. Also, he must be available on extremely short notice.

Regardless of the method followed, the end sought by leading machine tool companies today is to throw a closer cordon of more effective sales engineers and service men around territories occupied by important customers and prospects. Time will tell which is the best method. The significant fact at the moment is that new methods to meet new conditions actually are being adopted and vigorously pushed.

◆

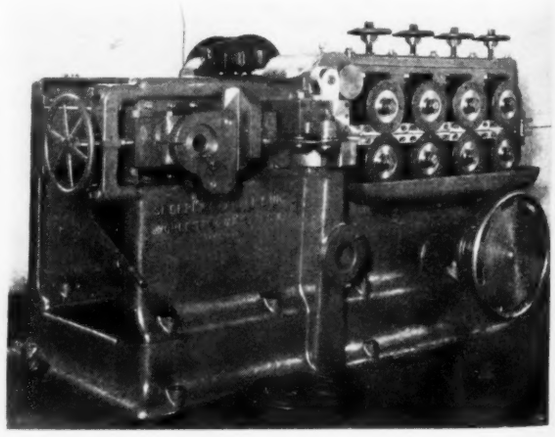
Self-Acting Machine Forms Rings of Alloy Steel

Sleeper & Hartley Inc., Worcester, Mass., has designed an built a unique ring coiling machine. This machine, which is shown in the accompanying illlustration, was developed especially for the production of starter rings used on Ford cars.

It is set up to coil ⅜ x 1-inch stock edgewise into 14-inch rings, the material being a special tough alloy steel. The basic design features are those of the heavy spring coiling machines built by this company, but the machine is much more massive and powerful, as its weight of over 15 tons indicates.

Stock is fed from 400 pound bundles to the coiling mechanism through four pairs of knurled rolls under heavy pressure. Upon emerging from these feed rolls curvature is started by deflector rolls. Then the strip passes between coiling rolls which are adjustable to close

AUTOMATIC forming machine developed by Sleeper & Hartley Inc. for rapid production of automobile starter rings. This machine feeds itself with alloy steel stock from 400 pound coils, producing accurate rings at rate of 25 per minute



Grinding Facts"
practises in leading shops

Grinders

OPERATION:
ROUGH AND SEMI-FINISH GRIND ALL OVER ON GRINDING WHEEL SPINDLE.

MACHINE:
14 IN. BY 48 IN. CINCINNATI PLAIN SELF-CONTAINED GRINDER.

MATERIAL:
S. A. E. 3145 HEAT TREATED STEEL.

STOCK REMOVAL:
.030 INCH.

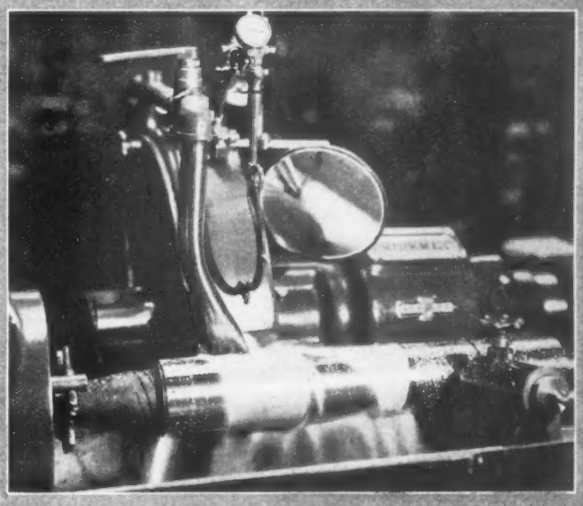
LIMITS:
PLUS, .0000 INCH. MINUS, .0002 INCH.

GRINDING WHEEL:
30 IN. BY 3 IN. BY 20 IN. 40N27 ALOXITE.

TIME PER PIECE:
35 MINUTES.

LUBRICANT:
1 PART SUNOCO TO 40 PARTS WATER.

Sunoco cools the work and produces a smooth finish



Courtesy of Cincinnati Grinders Incorporated, Cincinnati, O.

HIGH surface speeds necessitate the use of a free flowing grinding fluid, one that absorbs heat rapidly. Sunoco prevents distortion and maintains accuracy; it further permits maximum grinding efficiency through the elimination of glazing.

SUN OIL COMPANY, Ltd., Montreal, Canada.

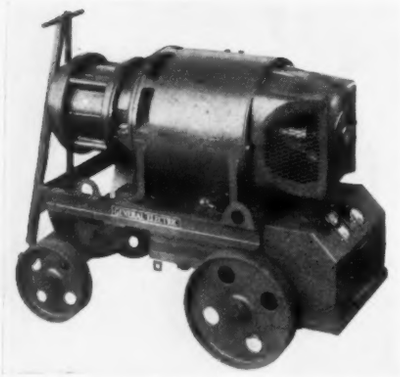
OCO
CUTTING OIL
of BLUE SUNOCO MOTOR FUEL

Beaumont, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Jackson, (Mich.), Jacksonville, Miami, Montreal, Newark, New York, cuse, Tampa, Toledo, Toronto, Trenton, Tulsa, Wilmington, Youngstown.

Send for this completely new edition of "Cutting and Grinding Facts"— it is a 48 page, interesting booklet full of illustrations and descriptions of methods practiced in leading shops.

A careful test of Sunoco Emulsifying Cutting Oil is suggested in your own plant, under your own operating conditions. We are confident that a thorough, careful test will quickly convince you of its merits and its aid to higher efficiency and real economy.

Our cutting oil engineers will welcome the opportunity to discuss the selection and application of cutting lubricants as they apply specifically to your metal cutting operations.



General Electric single operator type arc welding set

limits and give the ring its final shape.

Following this another series of rolls guide the ring to a shear. Here the feed momentarily is stopped through cam action and the ring is sheared from its stock by a pressure of approximately 300 tons. The rings, which are held to a tolerance of 0.0025-inch, are produced at the rate of 25 per minute.

By changes in adjustment the ends of the ring can be made to overlap, just touch or to have a gap between. In this particular case the ends are to be butt welded, hence they are made to just touch. The rings go to the welder on a conveyor and after welding they either may be sized with a punch or bored to size. Subsequently, gear teeth are cut on the outside diameter, the rings are hardened and tempered, and then pressed onto the flywheels.

Aside from starting in a new coil of stock, the machine is entirely automatic in its operation. It is fully equipped with antifricton bearings and is provided with an overload clutch and other safety devices. Control levers are conveniently located on both sides of the machine. The lower feed rolls run in a bath of oil which is carried by them to the strip, which in turn lubricates the surfaces of the deflector and coiling rolls.

All bearings are pressure lubricated from a central station. The deflector roll bearings each receive a shot of oil from a special lubricator each time a ring is turned off. Drive is by a 30-horsepower motor running at 1200 revolutions per minute.

◆

Flue Dust Conditioner Is a Simple, Compact Unit

Edgar E. Brosius Inc., Pittsburgh, has developed a flue dust conditioner which, while primarily intended for blast furnace use, can be adapted to a wide range of other dust problems. One of these conditions is shown in the accompanying illustration.

With this device, dust is conditioned directly at the dust catcher, ready for the sintering plant. The sensible heat is removed and the dust conditioned by being passed through a rotating cage wherein it is agitated and mixed with water. Sludge water direct from gas cleaner equipment may be used without filtering even though it carries 40 to 60 per cent of solids. Any degree of moistening can be obtained by regulating the water supply.

Practically no free dust escapes which eliminates dust clouds and subsequent cleaning up, as well as reducing wear on equipment ordinarily resulting from abrasive particles when untreated dust is emptied.

◆

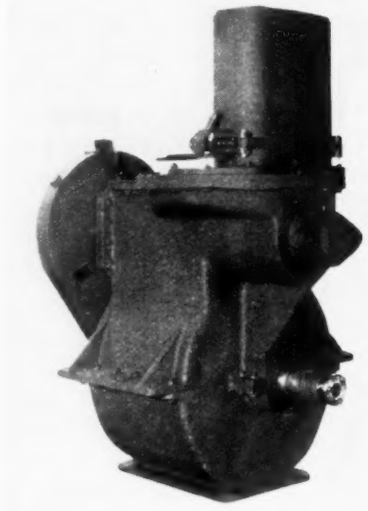
New Electric Welders Are Single Operator Type

General Electric Co., Schenectady, N. Y., announces a new line of single operator welding sets in which are incorporated a number of important improvements. A portable model is shown in the accompanying illustration.

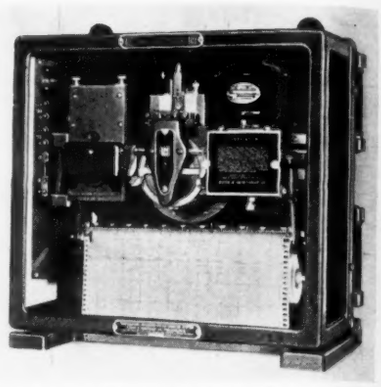
While the latest design of standard alternating current motor has been successfully adapted for use on these sets, the generator is a distinctive new design. In the direct current models standard motors also are used. Compact two-bearing construction is followed on alternating current models up to 600 amperes capacity. The sets are self-excited with a tapped series field for major current adjustments and a shunt field rheostat gives duplex voltage control.

A typical alternating current set consists of a generator with an overhung driving motor mounted on a simple base to which is attached a strong sheet metal control cabinet inclosing the generator control devices, meters and motor starting equipment. A specially designed transformer-reactor is mounted in the base under the generator. Base supports are arranged to be bolted to the floor or to provide easy attachment of axles and wheels as shown in the illustration. The compactness of the assembly is indicated by the fact that a typical 300-ampere alternating current set stands only 36 inches high, and is only 50 inches long by 23 inches wide. The weight of this particular set is 1865 pounds.

These welders are built in capacities of 100, 200, 300, 400 and 600 amperes, and in addition to the alternating and direct current motor driven models, gasoline engine driven sets also will be available. Among the improvements the maker mentions: Practically instantaneous voltage recovery from short circuit to nearly full open circuit, thus giving a quickly responsive arc; duplex voltage control by operator with surplus voltage available on long welds; simplified control and operation.



Flue dust conditioning unit developed by Edgar E. Brosius Inc.



Improved potentiometer-pyrometer built by Leeds & Northrup Co.

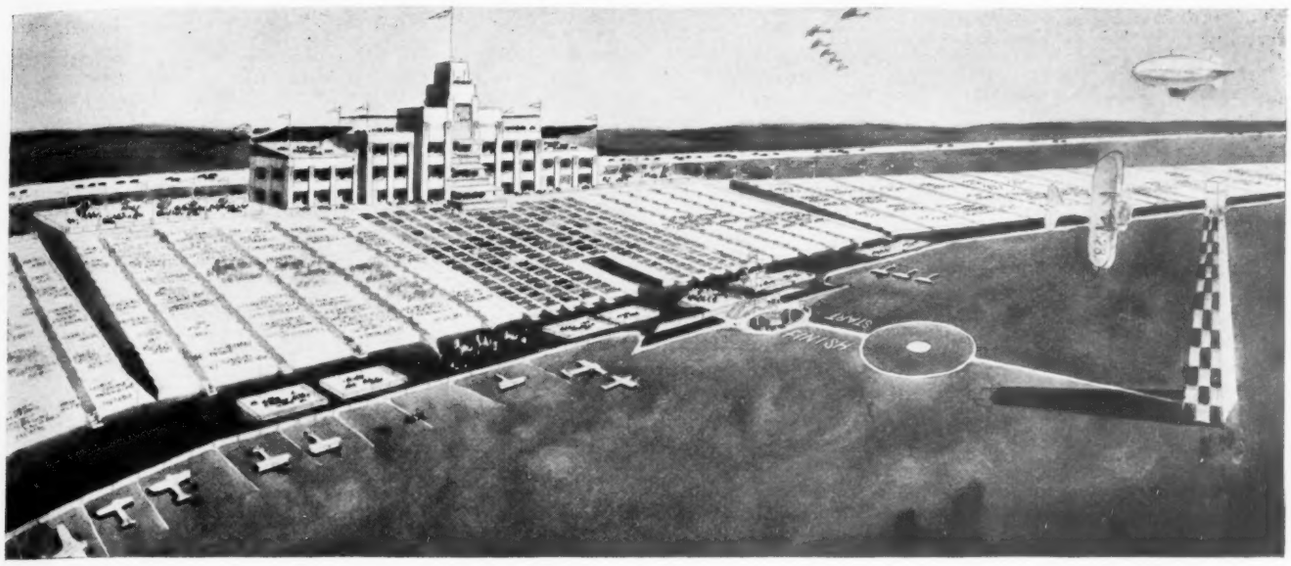
◆

Potentiometer Pyrometers Have Been Improved

Leeds & Northrup Co., 4901 Stenton avenue, Philadelphia, has introduced an improved line of indicating, recording and controlling potentiometer pyrometers in which are embodied many improvements over the similar instruments which were in-

NATIONAL AIR RACES

CLEVELAND—AUG. 29-SEPT. 7



New, complete and well-appointed Air Race Administration Building and Grand Stand, recently constructed by The Austin Co

SEE AVIATION ON REVIEW!

Opportunity still knocks in the Aeronautical Industry!

Here, in Cleveland, at the National Air Races, leaders of every industry will witness the newest developments and improvements in Aviation . . . see new speed records established, see "Race Horse Starts" add to the thrill of racing, watch the "City of Akron", world's largest dirigible, make her debut, see the country's famous pilots in action, see Aviation on Review!

If you have any direct or indirect connection with Aviation you owe it to your own best interests to witness this great event which represents the opening of another brilliant decade in the history of Aviation. If you now have no particular interest in the industry you may find unexpected opportunities.

Cleveland welcomes you at this great sport event. Its complete and well-appointed Air Race Administration Building and Grand Stand (40,000 capacity), its Executive Club, Social Club, Tea Room and Cafeteria ("eating" capacity 2,000), all constructed by Austin in record time, are ready to add to your comfort and enjoyment. You are especially invited to inspect the Cleveland Airport, see the many innovations in its great field, its service structures, its modern hangars—many buildings which have been designed and constructed by The Austin Company.

Engineers and builders for every major industry, The Austin Company, pioneered in the aeronautical field and has designed and built projects in 61 cities and 27 states from coast to coast. Whatever type or size of project you may be considering, — complete airport, hangar, aircraft or accessory manufacturing plant —you should have the benefit of Austin's advanced ideas.

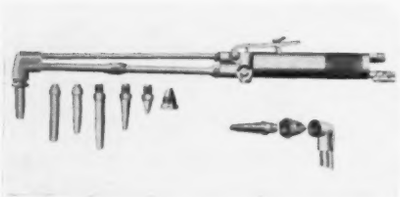
THE AUSTIN COMPANY

Airport Engineers and Builders - National Headquarters — Cleveland

THE AUSTIN METHOD

NEW YORK CHICAGO PHILADELPHIA PITTSBURGH
CINCINNATI DETROIT BOSTON NEWARK ST. LOUIS
SEATTLE PORTLAND DALLAS LOS ANGELES
OAKLAND SAN FRANCISCO TORONTO

1931 NATIONAL AIR RACES CLEVELAND AUG. 29 - SEPT. 7



Cutting and welding torch designed by Alexander Milburn Co.

troduced by this company in 1910. One of these new potentiometer pyrometers is shown in the accompanying illustration.

To insure maximum reliability in measurement and control of industrial temperatures, these new instruments have been made more sensitive, more rugged and faster in operation than their predecessors. They are fully automatic and necessity for daily attention and adjustment has been eliminated. This has been accomplished by a new mechanical balancing device in conjunction with an automatic standardizer which checks the circuit at least every 45 minutes.

The balancing device insures micrometer sensitivity, and at the same time requires no adjustment and acts with great speed. Due to complete elimination of clearance between galvanometer pointer and levers, pointer deflections as small as 0.001-inch can be detected and recorded. The recording pen can step across the entire 9⅛ inches calibrated chart in less than 22 seconds. A simple and direct nonslip clutch drives the pen, and automatically is prevented from attempting to move the pen beyond either end of the scale.

◆

Pyramid Type Bending Roll Curls Small Cylinders

Cleveland Punch & Shear Works Co., 3917 St. Clair avenue, Cleveland, has developed a pyramid type bending roll for the curling of heavy material into cylinders of small diameter. One of these machines is shown in the accompanying illustration, this being set up to produce an 8-inch diameter shell, using a top roll of only slightly less than that diameter.

Rolling of cylinders so close to the diameter of the top roll is made possible by correct relation between center distances and diameter of rolls. Cylinders like this show only negligible deflection, the one on the top roll in the illustration having less than 1/32-inch at any point along its entire length.

A unique air-operated drop hinge allows easy removal of cylinders from the roll. The machine is bushed throughout with high grade bronze, all bearings being lubricated by a single shot pressure system. Individual motor drive is provided for operating the rolls and for raising and lowering the top roll. This is an entirely self-contained machine and none of its parts extend below floor level. This last mentioned feature eliminates need for a pit, therefore the machine can be bolted to the floor at any convenient location.

◆

Cutting and Welding Torch Takes Various Tips

Alexander Milburn Co., 1416-1428 West Baltimore street, Baltimore, has developed a new cutting and welding torch. One of these torches, together with various tips which can be applied to it, is shown in the illustration which appears in the upper left hand corner of this page.

This torch is designed to be rugged and durable, its principal parts being of forged bronze and its tubes of nickel silver. A feature of the design is a leak-proof, high pressure type valve, the seats of which are readily accessible for renewal without requiring disassembly of handle or other parts.

As indicated in the illustration, the head will take conical seated tips which also fit another popular type of torch made by this company. Its tips also are interchangeable with torches of other makes. This new model can be converted immediately from a cutting to a welding torch by means of a special adapter, which enables it to take several varieties of tips made by this company as well as by other companies.

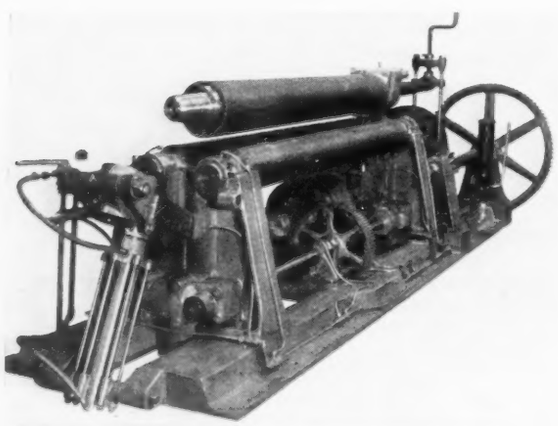
Modification of standard micro-indicator stand introduced by R. Y. Ferner

◆

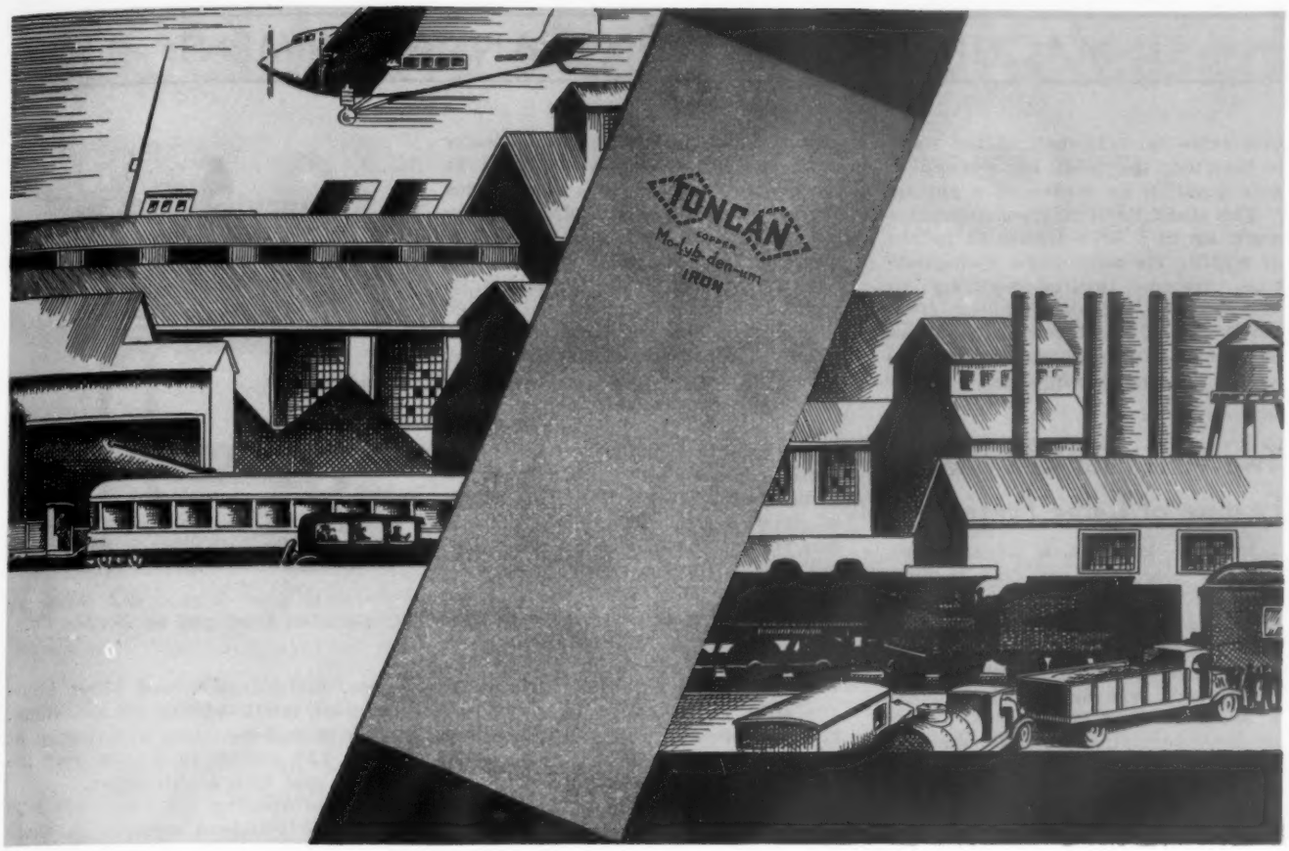
Modified Micro-Indicator Handles Flanged Work

R. Y. Ferner Co., Investment building, Washington, announces a modification of the Societe Genevoise micro-indicator stand by which this instrument is adapted to the precision measuring of recessed pieces or of pieces having a raised rim. In the accompanying illustration the instrument equipped with this device, is shown measuring the thickness of the web of a flanged micrometer thimble.

Primarily, the attachment consists of a hardened and ground steel table which can be raised and lowered by a lever, thereby allowing the easy insertion and removal of flanged pieces. The vertical movement of



PYRAMID type bending roll designed and built by Cleveland Punch & Shear Works Co. has ability to curl heavy material into cylinders of small diameter with negligible variation in their diameter



TONCAN IRON
SERVANT OF INDUSTRY

In a thousand and one places . . . in every line of industry . . . wherever corrosion rears its ugly head, Toncan Iron is the logical choice for sheets.

To a base of highly refined iron, copper and molybdenum have been added to form an alloy—an alloy that defies time and the elements.

For roofing and siding there can be no possible comparison of Toncan with non-alloyed ferrous sheets. For heavier service—car plates, tanks, culverts—there is no more sensible selection. And because long life means true economy, Toncan Iron, as the years go by, is setting new standards of value in industrial buying.

Distributor or warehouse stocks are not far from you and are available on short notice.

TONCAN
COPPER
MO-LYB-DEN-UM
IRON

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES: YOUNGSTOWN, OHIO

this table is 3/16-inch. After work is inserted, the table is returned to zero position by means of a spring.

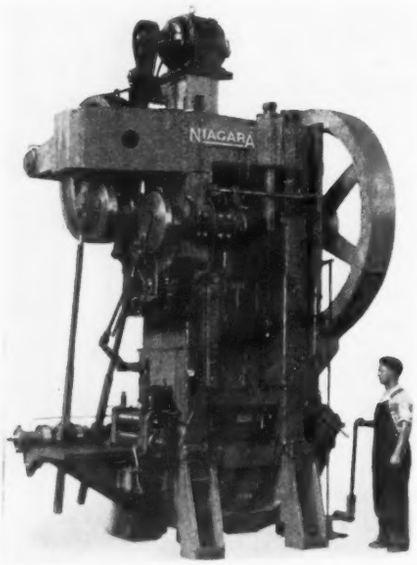
The stand itself will accommodate work up to 5 or 6 inches in height or width. Its knife-edge multiplication system insures accuracy to 0.00005-inch. Scales reading from 0.002 to 0.020-inch per division can be supplied, thereby suiting various grades of inspection work.

◆

Two-Increment Roll Feed Is Feature of Large Press

Niagara Machine & Tool Works, 637-697 Northland avenue, Buffalo, recently completed a large single crank press embodying a special two-increment roll feed. This press which is shown in the accompanying illustration, was developed to punch a predetermined number of groups of holes in strip stock, the distance between the groups being uniform but the space between the last group and the end of the sheet being greater, thus necessitating an automatic change of feed after the last stroke from the standard increment to a longer one.

The strip stock, which is comparatively wide, is previously cut to correct lengths. These sections are inserted one by one between the feed rolls and through the opening in the right hand housing of the press. Then the operator engages the clutch, whereupon press, die and roll feed operate together automatically to give the required number of evenly spaced perforations. After the final punching stroke the long feed is engaged, which not only automatically gives the broad unpunched area at the end of the strip, but also carries the edge of the strip clear of the left hand feed rolls and stops the press.



Two-increment roll feed press built by Niagara Machine & Tool Works

The press has straight uprights, its crown, uprights and bed being tied together rigidly by large steel tie-rods which are shrunk in place. Any especially large opening in the uprights is necessitated by the considerable width of the strip stock which is employed. The crown is of box section, heavily re-enforced by longitudinal and cross ribs. The bed is of deep section and is heavily bottom-ribbed, the legs being cast integral with it. Lower tie-rod nuts clear the floor.

The slide, which is guided by long gibs with generous bearing surfaces, is counter-balanced by springs inclosed in steel cylinders. Motion of the slide is controlled by a full automatic multiple disk clutch which can be operated either by hand or foot. This clutch is built into the flywheel, which is mounted on antifriction bearings on the drive shaft. The drive shaft is carried in bronze bushings of generous size.

Control Features

Control is arranged so that when operating with roll feed the press can at any time be stopped by an emergency hand lever. The brake is released automatically when the clutch is engaged and again is applied to stop the press when the clutch is disengaged. The brake mechanism which is a separate unit mounted at a considerable distance from the clutch to avoid heat transfer, has large self-aligning shoes actuated positively by toggle levers.

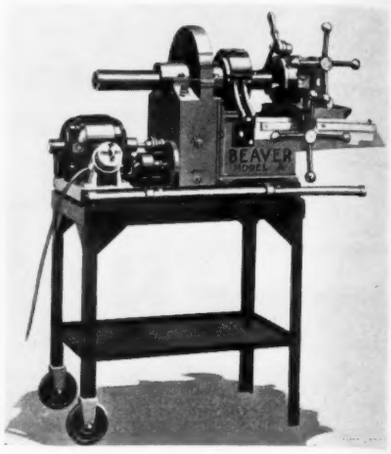
Belted motor drive is provided for correct tension being maintained by a self-adjusting antifriction bearing idler. Hobbed gears are used throughout to insure smooth, quiet power transmission.

◆

Portable Pipe Machine Has Advantageous Features

Borden Co., Warren, O., has put on the market a portable machine for cutting and threading pipe. The model shown in the accompanying illustration is motor-driven and has capacity to cut, thread and ream steel, wrought iron, brass or cast iron pipe from ½ to 2 inches in diameter.

The machine is mounted on a steel stand which gives easy portability and has provision for holding tools, work, etc. in a tray. To give lightness, main frame, and other housings of the head are of aluminum. This is said to effect a saving of at least 125 pounds in weight over the usual cast iron construction.



Portable pipe cutting and threading machine developed by Borden Co.

Three opening die heads are supplied as standard equipment, these being ½ x ¾-inch, 1 x 1¼ inches and 1½ x 2 inches. They are adjustable to cut over or under standard size when desirable. As it is unnecessary to back off these dies over the finished threads, much time is saved and wear and tear on both chasers and work is eliminted. Cut-off is the same as in the square-end pipe cutters built by this company.

A feature of this new machine is that the die head can be tilted back out of the way when cutting and threading work up to 12 inches using a universal shaft and geared die stocks and pipe cutters. The machine is equipped with a convenient outside-mounted coolant pump. The ½-horsepower universal motor, which is reversible at the switch, is connected with a flexible coupling. It operates from the ordinary 110-volt lighting circuit.

◆

Bonney Forge & Tool Works Address Was Omitted

On page 45 of the August 27,1931 issue of STEEL there appeared an illustrated description of a new line of plain and threaded pipe fittings developed by the Bonney Forge & Tool Works. These drop-forged fittings are designed to increase speed and dependability in fabrication of piping systems by the welding method.

The address of the Bonney Forge & Tool Works, which was omitted from this description last week, is: Allentown, Pa.

Shapes More Active; Pipe Released

Steelmakers Still Confident of Moderate Seasonal Improvement—Operations Off Another Point—August Pig Iron Output Down 12.7 Per Cent

SEPTEMBER has arrived on a wave of structural steel buying and substantial releases of line pipe, but conspicuously lacks the lift which usually marks the closing weeks of the third quarter. In fact, actual steel production has eased off another point this week, to 31 per cent.

By now, steelworks have surrendered practically all of the improvement of mid-August, and on account of Labor Day next week's operating rate may set a new low for the year. But the industry still is moderately confident of a mild rebound in the fore part of the fourth quarter.

Trustworthy indications from Detroit that a number of new automobile models will be in production in October appear to insure better demand for bars, sheets and strip within a fortnight. Railroad releases of track material are slightly broader. Some recent heavy purchases of line pipe are being released for delivery before cold weather prevents their laying.

Meanwhile, structural steel activity is noteworthy both in awards and inquiry, and while some tonnage is for distant delivery, immediate shipments are fair in volume. The probability of a steel wage reduction about Oct. 1 may be a factor in convincing buyers that steel is fully liquidated. Altogether, steel has a mildly-encouraging outlook for 60 days.

This outlook is not obscured appreciably by the further, expected decline in pig iron production in August, when the daily rate of 41,201 tons was 12.7 per cent below the 47,170-ton rate of July. The net loss in active blast furnace stacks in August was 7, leaving 75 out of 303 potential stacks in blast Aug. 31. For the year to date, total output of pig iron is 13,837,634 tons; for the comparable period of last year, 23,468,160 tons.

This week's structural steel bookings were put up to 104,273 tons, third largest weekly total this year, mainly by 48,200 tons for the Chicago postoffice, placed with the American Bridge Co.; 24,000 tons for the parcel post building in New York, taken by the McClintic-Marshall Corp.; and 8000 tons for a seawall at Milwaukee, awarded to the Bethlehem and Inland companies.

Bids also are in on 8200 tons for highway work at Newark, N. J., and 7000 tons for a bridge at Sag Harbor, N. Y. For naval vessels, 20,000 tons of structurals and plates will be up shortly. The new department of justice building at Washington requires 10,000 tons. The Port Authority terminal in New York, estimated at 22,000 tons, matures shortly. The week's awards once more put 1931 structural awards ahead of 1930 by 1,331,002 tons against 1,296,560.

Action is probable this week on 39,000 tons of pipe for the Stanolind Pipe Line Co., and 4000 tons of 36-inch water line pipe are up for Lincoln, Nebr. Rail releases at Chicago still are expanding moderately, 3500 tons being ordered out for early September. The Cincinnati Union Terminal Co. has placed 4616 tons of rails. The Pennsylvania this month may inquire for 150,000 tons of rails, one-fourth less than it purchased a year ago.

Demand for pig iron is brisker, as automotive, stove and implement plants plan more active schedules. Southern iron for shipment to eastern competitive points is down 25 cents a ton to $10.75, furnace, the first break in the price in several months.

Steel producers are confident the expected reduction in common labor rates will not have a sequel in pressure against prices, which continue moderately firm for raw materials and finished steel. STEEL's composite of steel and iron products is unchanged this week at $31.04; the finished steel composite also continues at $48.72, and steelworks scrap, at $8.66.

Composite Market Averages

	This Week (Sept. 2)	Last Week (Aug. 26)	One Month Ago (Aug., 1931)	Three Months Ago (June, 1931)	One Year Ago (Sept., 1930)	Ten Years Ago (Sept., 1921)
Iron and Steel Composite	$31.04	$31.04	$31.05	$31.02	$32.65	$35.34
Finished Steel Composite	48.72	48.72	48.72	48.60	50.87	54.73
Steelworks Scrap Composite	8.66	8.66	8.70	8.84	12.81	10.97

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 2, 1931	August 1931	June 1931	Sept. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.13
Basic, valley	17.00	17.00	17.00	17.75
Basic, eastern del. eastern Pa.	16.75	16.75	17.00	17.90
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	19.13
No. 2 foundry, Chicago	17.50	17.50	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.26	17.51	17.76	19.76
Malleable, valley	17.00	17.00	17.00	18.35
Malleable, Chicago	17.50	17.50	17.50	17.50
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	18.50
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $10.75 to $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.40	2.60
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	31.00
Wire rods, Pittsburgh	35.00	35.00	35.00	36.00

	Sept. 2, 1931	August 1931	June 1931	Sept. 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.94	1.89
Iron bars, Chicago	1.70	1.70	1.70	1.75
Shapes, Pittsburgh	1.60	1.60	1.65	1.60
Shapes, Philadelphia	1.76	1.76	1.76	1.86
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.65	1.60
Tank plates, Philadelphia	1.80½	1.80½	1.85½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	2.10
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.15	2.40
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.80	3.00
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.40	2.60
Sheets, No. 24 galvan., Chi.	3.05	3.05	2.95	3.25
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.90	1.90	1.80	2.00
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	10.75	10.70	10.30	15.70
Heavy melting steel, eastern Pa.	8.75	8.55	8.75	13.00
Heavy melting steel, Chicago	8.00	8.25	8.50	12.25
No. 1 wrought, eastern Pa.	9.75	9.75	10.00	14.25
No. 1 wrought, Chicago	8.00	8.25	8.25	11.25
Rails for rolling, Chicago	10.50	10.50	10.90	14.50

Sheets

Automobile Model Changes Expected to Develop New Business —Tin Mill Black Sheets Up $2

SHEET PRICES, PAGE 57

Pittsburgh—Sheet orders remain at a low level, and prospective improvement in demand from the automotive and other leading industries as yet has not been translated into actual specifications. Some inquiries are pending for sheets for the new Ford model, while model changes by other interests are expected to develop some business in September. Total automotive demand so far has shown little change over the past several weeks. Aggregate of all business is sufficient to provide mill operations of 30 to 35 per cent, unchanged from the rate a week ago. The lack of improvement in business is postponing a thorough test of prices although quotations are steady. Hot-rolled annealed sheets continue 2.40c, Pittsburgh; galvanized, 2.90c, and blue annealed, 1.85c. Tin mill black sheets have been advanced $2 a ton, effective immediately, to 2.65c, Pittsburgh.

New York—Sheet prices remain steady, pending a test which is likely to develop this month when contracting for fourth quarter gets under way. Current buying is spotty.

Philadelphia — Sheet sellers are awaiting an expected test of prices this month. Current demand is quiet. Action on 250 tons of galvanized sheets for a building at Market and Twelfth streets has been postponed temporarily.

Youngstown, O.—Slowly emerging from last week's operating rate at 20 per cent, independent sheet mills started this week at about 25 per cent. The Mahoning Valley Steel Co. started six units, and the Youngstown Sheet & Tube Co. has eight units active at Campbell, though the Brier Hill mills are idle. About 30 independent sheet units are active, of the district total of 120. New business in common grades is slow. The expected revival in autobody sheets has not appeared, with mills making this grade down to 35 or 40 per cent. They look forward hopefully to the second or third week of this month.

Cleveland — Consumers are not pressing for price advantage, and the little amounts moving are billed at the regular quotations under the new classifications. One interest says sheet prices are the firmest they have been in more than ten years. Barrel manufacturers are quiet, other sheet metal fabricators are restricted, and jobbing outlets are limited. The immediate outlook is not promising. Small orders appear mainly for fill-in purposes. The aggregate is far from justifying higher than 30 per cent mill operations.

Cincinnati—Demand for sheets in this district declined in August, compared to July, and production schedules remain under 40 per cent. Specifications from automotive sources are light.

Chicago—Sheet mill operations at about 35 per cent show a slight gain, due to resumption of ten hot mills at Milwaukee for automobile license plate production. The Milwaukee unit may go down again in about a week. Inland Steel Co. received an order for 400 tons of sheets for license plates for delivery to the state prison at Waupun, Wis., and 200 additional tons are to be purchased. Prices are given little test, due to the prevalence of less-carload business, but apparently are holding. No. 10 blue annealed are 1.95c, Chicago mills, while sales of No. 24 galvanized have been on the basis of 3.05c, delivered, Chicago.

St. Louis—Shipments are fairly steady and are larger than incoming orders. The expected seasonal improvement in demand for galvanized sheets has failed to appear thus far. Due to the low price of cotton, it is likely to be smaller than in past seasons. The market for blue annealed sheets is more active.

Birmingham, Ala. — Production has been proceeding at a little higher rate than demand, and operations have been stepped down to 40 to 50 per cent.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base..	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, el.	2.90½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c
Woven wire fencing, (9-11 ga.)	$55.00 and $60.00
(12½ ga. and lighter)	60.00 and 65.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.80½c
New York, delivered	1.88c
Boston, delivered	2.00c
Chicago, base	1.70c
Cleveland, base, for rail-roads	1.65c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.76c
New York, del.	1.85½c
Boston, del.	1.98½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.00c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.60c to 1.80c
Chi., rail steel	1.35c to 1.60c
Chi., rail steel, bridge and culvert	1.60c to 1.65c
Philadelphia, cut lengths	2.14c
Cleveland, cut lengths	1.75c to 1.80c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25 Mo.	0.50	Carbon Van.	0.95
4600 .20 to .30 Mo.		9250 (flats)	0.25
		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 1/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c
Do. 6 1/16 to 24 in.	1.65c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c

Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Western Mills Hold Production Rate—Foreign Material Offered Below Eastern Market

BAR PRICES, PAGE 57

Chicago—Scattered bar orders are maintaining 30 to 35 per cent mill operations. Brighter prospects for later this month are foreseen by cold-rolled users and western automotive partsmakers, while a substantial upturn in automotive demand is not considered likely before October. Deformed bars are important in shipments, despite the slump in Illinois public work, due to the prevailing wage dispute. A few inquiries have come for fourth quarter, largely from concerns engaged in public work, but virtually no quotations have been given by mills for that period. The base of 1.70c, Chicago, applies for spot and nearby sales. Improvement among implement and tractor buyers may result from prospective business from Soviet Russia. A large implement maker is planning to resume in December. Miscellaneous manufacturing buyers show little interest. Alloy steel bar mills are operating at about 25 per cent.

New York—Bar sellers look for improvement this month, with jobbers expected to furnish the major portion of specifications. As for direct consumption by manufacturers, the outlook is for only a mild increase. Commercial steel bars are 1.60c, Pittsburgh, and common iron bars, 1.60c to 1.70c.

Philadelphia—Commercial steel bars are moving quietly at 1.60c, Pittsburgh. Prime foreign material is being offered at 1.45c, local docks. Common iron bars are quoted at 1.60c to 1.70c, Pittsburgh.

Pittsburgh—Steel bar orders have been slightly more numerous, although the tonnage involved continues light. Buying is more diversified but lacks improvement from automotive interests. August specifications will show little change from those of July while shipments are expected to be slightly lower. Prices are steady with 1.60c, Pittsburgh, generally firm on new business.

Cleveland—August steel bar specifications for the majority of interests failed to measure up to the July total, the latter volume in itself at the time apparently slack enough. Such small orders as are received not only are without feature but promise nothing of an immediate week to week pickup. Local bolt and nut interests report a slight upturn in demand but automobile parts concerns are not increasing their bar specifications. The price of 1.65c, Cleveland base, is unchanged, for delivery both in and out of town.

Youngstown, O.—Somewhat more generous has been the distribution of common steel bar specifications to some independent district mills, coming from a variety of sources. Alloy steel bars, however, are in no better case than other lines of finished steel that go into the building of automotive products. Common steel bars continue to bring 1.60c, Pittsburgh.

Cold Finished Orders Less; Firmer Prices Noted

Cold Finished Prices, Page 57

Pittsburgh—Demand for cold-finished steel bars continue at the lowest level of the year, with continued quietness in automotive circles pointing to light shipments over the next several weeks. Few inquiries from automotive users are pending. Requirements of other buyers also are light. The market on new business usually is held at 2.10c, Pittsburgh.

Cleveland—New business is quoted at a firm 2.10c, Cleveland, on a united front without the usual deviation from one or two mills below this figure. However, material is being specified from old contracts at 2.00c, Cleveland, and the 1.90c, Pittsburgh base, is being applied largely on business in the Detroit district. Some significance is attached to the apparently firm stand recently on prices.

Tin Plate Outlook Improves Moderately

Tin Plate Prices, Page 57

Pittsburgh—Sentiment in the tin plate industry is slightly improved while operations show little additional change, continuing below 50 per cent. Operations are almost entirely on a hand-to-mouth basis. Specifications show no material improvement, but mills anticipate a steadier demand in the near future. Reports indicate a fairly substantial curtailment in the tomato pack, although similar predictions a year ago proved unfounded and a definite estimate is difficult to make at this time. The corn crop is in good condition but packing will be extended over the next two months so that estimates as to the total pack are only approximate at this time, although some decline is looked for from the 1930 volume. Tin plate continues $5, Pittsburgh, per base box, while tin mill black sheets have been advanced $2 a ton to 2.65c, Pittsburgh.

Plates

Small Orders Still Predominate —Prospective Award for 39,000-Ton Pipe Line Interests

PLATE PRICES, PAGE 57

Chicago—Plate mill operations are barely 30 per cent. Tank plate demand from the oil country is awaited. About 1000 tons have been let for tank work in the Southwest, and no fresh inquiry has appeared. All plate contracting is for early shipment. The base price holds at 1.70c, Chicago, but is untested. Interest in pipe line award centers in the pending 39,000 tons for the Stanolind Pipe Line Co.

Philadelphia — The market for plates is dull and the price is unchanged at 1.70c, base, Coatesville, Pa. New inquiry is featured by one, and possibly two, boats for Seatrains Inc., New Orleans, each requiring 5600 tons of steel, two-thirds of which are plates.

Pittsburgh — Plate specifications remain at a low ebb while little new business is appearing. Demand is coming mainly from miscellaneous consumers. Inquiry for fabricated projects is quiet. The market usually is 1.60c, Pittsburgh.

New York—Plate orders are light, although pending bridge work and subway cars for the board of transportation hold promise of fairly substantial business later. The Norfolk & Western railroad will open bids Sept. 16 on 1200 tons of steel riser plates. The market is 1.70c, base, Coatesville, Pa., with no indications of a change for fourth quarter.

Cleveland—Plate demand is dull, but with no disturbance to the price of 1.60c, base, Pittsburgh. A flow of small specifications continues from week to week but not of proportions to afford steady mill rollings. It is the 100-ton size orders that depressed conditions are most keenly felt; large jobs continue fairly frequent. The Cleve-

land base on plates for railroad work only will be tested soon when carriers come out for fourth quarter needs.

Approximately 1200 tons are up for ship repair work on the Great Lakes.

Contracts Placed

500 tons, penstock, California-Oregon Power Co., Central Point, Oreg., to Minneapolis-Moline Power Implement Co., Minneapolis.

170 tons, steel sheet piling, cofferdam, Metropolitan avenue bridge, Brooklyn, N. Y., to Bethlehem Steel Co.

Contracts Pending

11,000 to 12,000 tons, two training vessels for United States navy.

1470 tons, armor, bureau of ordnance, navy department, Washington; bids Sept. 14.

1200 tons, repair work, Great Lakes shipyards.

700 tons, tunnel for Cle Elum government dam project, Cle Elum, Wash.; bids being taken by Winston, Bros., Minneapolis, general contractors.

210 tons, irrigation project for United Water Co., Wenatchee, Wash.; bids in.

August Lake Iron Ore Shipments Increase

Iron Ore Prices, Page 68

Cleveland—Shipments of Lake Superior iron ore increased by 108,626 tons over July, the total for August amounting to 5,064,687 tons. To Sept. 1 this year shipments are 15,774,007 tons, down 16,801,914 tons from 32,575,921 tons in the comparable period last year.

Personals

(*Concluded from Page 23*)

sales manager. For two years prior to going with the company in 1928 Mr. Chilcoat was engaged in consulting commercial engineering work. He became identified with Pennsylvania railroad in 1900, and after six years he left to go with Westinghouse Air Brake Co., Wilmerding, Pa., and for a time was with Clark Car Co.

□ □ □

H. J. Beach, identified for 19 years with Flexible Steel Lacing Co., Chicago, has been elected president to succeed the late P. S. Rinaldo. Other officers are: M. B. Beach, vice president; H. L. Coates, secretary and director of sales; P. S. Rinaldo Jr., treasurer; and J. C. Olsen, assistant secretary and director of production.

Safety razor exports increased from 41,112 dozen in the first half of 1930 to 110,679 dozen in first half of 1931.

Railroads

Mill Releases Brighten Further —Bids Sept. 25 on 300 to 1500 New York Subway Cars

TRACK MATERIAL PRICES, PAGE 57

Chicago—Steel rail releases offer further encouragement. About 3500 tons has been ordered out for the early part of this month, while fresh track fastenings releases are in proportion. Expected increases in operation of rail mills and departments producing track fastenings may be deferred until late this month. Several thousand tons of angle bars, tie plates, spikes and track bolts have been released. Western car shops are specifying for about 1000 tons, marked for immediate shipment for Chesapeake & Ohio car repairs in this district. Only a small part of the 4616 tons of rails purchased by Cincinnati Union Terminal Co. may be ordered out this year.

New York—Formal inquiry by the local board of transportation for from 300 to 1500 steel subway cars is the only feature to a decidedly listless car market. Freight car demand is at a standstill.

Norfolk & Western takes bids Sept. 16 on 1200 steel riser plates.

Philadelphia—Pennsylvania railroad is expected out late in September with an inquiry for approximately 150,000 tons of rails, compared with around 200,000 tons last year. Last year's order, however, was not allocated among Illinois Steel Co., Carnegie Steel Co., Bethlehem Steel Co., and Inland Steel Co. until Jan. 2, 1931.

Pittsburgh — Fair releases have been received recently against old orders for track material. Considerable tonnage on books remains to be taken out while new business is quiet. No inquiry as yet has been received from the New York Central railroad for material in connection with its building of 500 gondolas.

Cincinnati—Cincinnati Union Terminal has placed 4616 tons of rails and accessories. Specifications include: Rail Joint Co., Chicago, 7800 steel rail joints; Carnegie Steel Co., Pittsburgh, 276,000 tie plates; Republic Steel Co., Youngstown, O., 86,000 track bolts; Reliance Mfg. Co., Massillon, O., 91,000 lock washers; Bethlehem Steel Co., Bethlehem, Pa., 2940 kegs of spikes and 25,000 lag screws. Previously an order for 4353 tons of 105-pound rails was awarded.

Rail Orders Placed

Cincinnati Union Terminal Co., 4616 tons; 3162 tons to United States Steel Corp. subsidiaries and 1454 tons to Inland Steel Co., Chicago. Work also includes 7800 steel rail joints to Rail Joint Co., Chicago; 276,000 tie plates to Carnegie Steel Co., Pittsburgh; 86,000 track bolts to Republic Steel Corp., Youngstown, O., 91,000 lock washers to Reliance Mfg. Co., Massillon, O.; 2940 kegs of spikes and 25,000 lag screws to Bethlehem Steel Co., Bethlehem, Pa.

Market Street Railway, San Francisco, 450 tons 122-pound girder rails, to Pacific Coast Steel Corp., San Francisco.

Zinc Institute Licenses Heavy Coating Makers

American Zinc institute, New York, states that it has licensed the American Sheet & Tin Plate Co., Continental Steel Corp., Reeves Mfg. Co., and Youngstown Sheet & Tube Co., to use its seal which has been devised to identify galvanized sheets carrying a zinc coating heavier than on the average commercial sheets.

The institute states that the matter is under consideration by other manufacturers of galvanized sheets and that a number of them, including Apollo Steel Co., Bethlehem Steel Co., Granite City Steel Co., Newport Rolling Mill Co., have indicated they are in sympathy with the movement but have not yet formally completed the license agreement.

Ornamental Iron Meeting

National Association of Ornamental Iron, Bronze and Wire Manufacturers will hold its twenty-fourth annual meeting at Hotel Statler, Detroit, Oct. 6-9. The meeting will comprise six sessions at which committee reports and address will be heard, a plant visitation, a banquet and a golf tournament.

Standard Is Extended

Washington—The bureau of standards, department of commerce, announces that the simplified practice recommendations on die head chasers has been affirmed without change for another year.

Stanley Electric Tool Co., New Britain, Conn., has found that the use of large sedans by its salesmen not only enables them to travel more comfortably but also permits them easily to carry a complete set of samples, aiding them in selling distributors.

Structural Shapes

American Bridge Gets Chicago Postoffice — Week's Awards Third Heaviest of Year, 104,273 Tons—New York Freight Terminal, New Jersey Bridges Active

STRUCTURAL SHAPE PRICES, PAGE 57

New York—Taylor-Fichter Steel Construction Co. is low on 8200 tons for another connecting link on the Northern New Jersey viaduct at Newark. John A. Roebling's Sons Co., Trenton, N. J., is low on two bridges over Shelter island sound, the projects taking close to 7000 tons of fabricated structural steel. Bids went in Aug. 31. General contracts have been awarded for jobs taking close to 50,000 tons on which early action is expected. New inquiry, largely confined to public work, is holding well. The Hartford postoffice will take 2000 tons, while 1500 is needed for the Trenton postoffice. Prices are steady at 1.70c, Eastern mill, efforts to stabilize the market at that figure on plain material meeting with better success than other attempts to establish a minimum.

Philadelphia—Buying still drags, though some large federal work is in prospect. Approximately 10,000 tons of shapes will be required for the department of justice building, Washington.

Pittsburgh — Local inquiry is headed by 1400 tons for a state bridge near Beaver, Pa. Spang, Chalfant & Co. has placed 750 tons for a new mill building at Ambridge, Pa. Specifications for plain material are quiet and little changed from the July volume with the market usually 1.60c, Pittsburgh.

Cleveland — Structurals are held at 1.60c, Pittsburgh. Fabricators are figuring about 750 tons of York state bridge work which went in Sept. 1. A school at Oneonta, N. Y., has been placed and revealed a wide divergence in fabricated bids. The underground garage for the Cleveland Mall is reported to be favored for construction along lines of New York subways and will consequently be steel instead of reinforced concrete. Plans will probably be out in four months.

Chicago—Virtually all structural inquiries consist of postoffice and bridge projects. Formal award of the 48,200 tons for the Chicago postoffice to American Bridge Co., low bidder, awaits only details at Washington. A few sales of plain material, covering shipment into October for specific projects, have been made on the basis of 1.70c, Chicago, with a few buyers asking for next quarter's prices. About 8000 tons of light structural material and sheet piling for Milwaukee harbor development work has been let.

St. Louis—Industrial Construction Co., low bidder for erection of steel for the union station approach of the municipal bridge, has withdrawn its bid because it can not comply with the clause of the contract specifying work must begin Sept. 12. It is probable the contract will be awarded to the Ben Hur Construction Co., second low, which bid $18.75 per ton, or $131,250 for the 7000 tons to be erected. The Industrial company's bid was $16 and the city engineer's estimate $20 per ton.

Contracts Placed

48,200 tons, postoffice and federal building, Chicago, to American Bridge Co., Pittsburgh, through John Griffiths & Son Co., Chicago, general contractor. Formal award to be made when contractor's bond is approved at Washington.

24,000 tons, parcel post building, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through George F. Driscoll Co., contractors.

8000 tons, light structural material and sheet piling for sewage treatment works and harbor development at Milwaukee; 1600 tons to Inland Steel Co., Chicago and 6400 tons to Bethlehem Steel Co., Bethlehem, Pa.

2700 tons, Seattle federal building, to Isaacson Iron Works, Seattle, through Murch Bros. Construction Co., St. Louis, contractor.

2500 tons, bridge over Yamaska river, St. Michael, Que., to MacKinnon Steel Corp., Sherbrooke, Que.

2000 tons, bridge over St. Francis river, Yamaska county, Que., to Canadian Vickers Ltd., Maisonneuve, Que.

1900 tons, viaduct and ramps, route 25, sections 8 and 8A, Essex county, N. J., to Fort Pitt Bridge Works Co., Pittsburgh, through International Engineering Co.

1748 tons, machine shop and hangars, Selfridge Field, Mich., shapes supplied by United States government through Banbrook Gowan Co., Detroit, contractor.

1250 tons, forest products laboratory for United States department of agriculture, at Madison, Wis., to Mississippi Valley Structural Steel Co., Chicago.

1200 tons, economics building, Cornell university, Ithaca, N. Y., reported let to American Bridge Co., Pittsburgh, through M. A. Long, Allentown, Pa., contractor.

750 tons, mill building for Spang, Chalfant & Co. Inc., Ambridge, Pa., to American Bridge Co., Pittsburgh.

700 tons, penstock, Central Point, Oreg., to Minneapolis-Moline Power Implement Co., Minneapolis.

700 tons, postoffice, Ft. Worth, Tex., to Mosher Steel & Machinery Co., Dallas, Tex.

550 tons, bridge, Two Rivers, Wis., to Worden-Allen Co., Milwaukee.

526 tons, two state bridges, Yakima county, Wash., to Hofius Steel & Equipment Co., Seattle, through D. Nygren, contractor, Seattle.

500 tons, high school, Quincy, Ill., to Rock Island Bridge & Iron Works, Rock Island, Ill.

500 tons, high school, Englewood, N. J., to Breen Iron Works, Newark, N. J.

500 tons, underframes for Pacific Fruit Express Co., San Francisco, to Consolidated Steel Corp., Los Angeles.

450 tons, plant, Chicago, for Pepsodent Co., to Mississippi Valley Structural Steel Co., Chicago, through Mathew Rauen, Chicago, contractor.

400 tons, additions to school No. 45, Staten Island, N. Y., to Easton Structural Steel Co., Easton, Pa.

375 tons, state highway bridge, Texas, to Mosher Steel & Machinery Co., Dallas, Tex. Field Bros. & McCelvey, Lubbock, Tex., contractors.

370 tons, bridge work, Indiana, to Vincennes Bridge Co., Vincennes, Ind.

340 tons, Pennsylvania railroad bridge, 170 tons each at Berlin, N. J., and Thompson, Pa., to Fort Pitt Bridge Works Co., Pittsburgh.

325 tons, piling, bulkhead, Columbia street, Erie basin, Brooklyn, N. Y., department of docks, to Bethlehem Steel Co., Bethlehem, Pa.; Allen N. Spooner & Sons Inc., contractor.

310 tons, Eicheilberg school, Hanover, Pa., to Frank M. Class, Harrisburg, Pa.

300 tons, arena, Lake Placid, N. Y., to American Bridge Co., Pittsburgh.

300 tons, high school, New Brunswick, N. J., to United Steel & Iron Works Inc., New Brunswick.

235 tons, bridge spans, Marseilles, Ill., to International Steel & Iron Co., Evansville, Ind.

215 tons, Fine Arts building, field house and recreation center, Louisiana State university, Baton Rouge, La., to Ingalls Iron Works Co., Birmingham, Ala.; Caldwell Brothers, New Orleans, contractors.

200 tons, bridge, Philadelphia, for Philadelphia & Reading railroad, to American Bridge Co., Pittsburgh.

200 tons, addition to state penitentiary, Walla Walla, Wash., to Isaacson Iron Works, Seattle, through J. T. Hulin, Spokane, contractor.

190 tons, Hoffmanville bridge, Gunpowder river, Baltimore, to Bartlett-Hayward Co., Baltimore; Forbes-Murphy Contracting Co., Baltimore, contractor.

175 tons, school, Oneonta, N. Y., to Ingalls Iron Works, Verona, Pa., through W. F. Henrichs, Cleveland, contractor.

150 tons, additional to Boston elevated

Awards Compared

	Tons
Awards this week	**104,273**
Awards last week	**31,445**
Awards two weeks ago	**9,920**
Awards this week in 1930	**46,255**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**36,695**
Av. weekly awards, August	**20,024**
Total awards to date, 1930	**1,296,563**
Total awards to date, 1931	**1,331,002**

terminal, Medford, Mass., to New England Structural Co., Boston.
150 tons, bridge, Pennsylvania railroad, Southern New Jersey, to Ingalls Iron Works Co., Verona, Pa.
150 tons, addition, school 4, Hackensack, N. J., to Hudson Structural Iron Works Inc., Jersey City, N. J.
140 tons, school, Bexley, O., to C. E. Morris Co., Columbus, O., through Robert H. Evans Co., contractor.
135 tons, McFarland junior high school, Washington, to Deitrich Bros., Baltimore, through L. Paschall, Richmond, Va., contractor.
125 tons, cotton gin, Corcoran, Calif., to Consolidated Steel Corp., Los Angeles.
114 tons, two schools, Washington, to Henry A. Hitner Sons, Philadelphia.
100 tons, addition, high school, Williamsville, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; A. E. Fidinger, Williamsville, contractor.
100 tons, chemistry building, A. and M. college, College Station, Tex., to Alamo Iron Works, San Antonio, Tex.
100 tons or more, hangar No. 2, Newark, N. J., airport, to Oltmer Iron Works, Hoboken, N. J.; bars to Truscon Steel Co.; Perth Amboy Construction Co. Inc., Perth Amboy, N. J., contractor.
100 tons or more, conversion of United States mint, New Orleans, into federal jail, to Jones & Laughlin Steel Corp., Pittsburgh; Gervais J. Favrot, New Orleans, general contractor; reinforcing steel to C. T. Patterson Co., New Orleans.
100 tons or more, shapes and bars, buildings, Exeter academy, Exeter, N. H., to New England Structural Steel Co., Boston, and Concrete Steel Co., New York; L. H. Shattuck Inc., Manchester, N. H., contractor.
100 tons, repairs to East Ninety-second street bridge, Chicago, to Duffin Iron Co., Chicago.
100 tons, Boston & Maine railroad bridges, Tilton, N. H., and Gardner, Mass., to Boston Bridge Works Inc., Boston.

Contracts Pending

23,000 tons, inland freight terminal, port of authority, New York; bids Sept. 11.
10,000 tons, department of justice building, Washington; foundation bids Sept. 8.
8200 tons shapes, 310 tons steel castings and 6600 feet railing, superstructure, highway viaduct, and ramp, route 25, connecting link, sections 7, 7A and 8, Newark, N. J., Taylor-Fichter Steel Construction Co., New York, low; bids Aug. 31, New Jersey state highway commission, Trenton, N. J.
7000 tons, superstructures, two bridges, Sag Harbor to Shelter Island, and Greenpoint to Shelter Island, Suffolk county, N. Y.; John A. Roebling's Sons Co., Trenton, N. J., low, approximately $1,299,000; Robinson & Steinman, New York, engineers; bids Aug. 31.
2000 tons, bascule bridges, Marseilles, Ill.; bids Sept. 15.
1400 tons, state bridge over Beaver river between Beaver and Bridgewater, Pa.
1000 tons, office addition, United States senate, Washington.
1000 tons, apartment, Philadelphia.
950 tons, piling, Pymatuning dam, Johnstown, Pa.
700 tons, bridge over St. Lawrence river, St. Gregoire de Montmorency, Que.
700 tons, bridge for Missouri Pacific railroad, St. Louis.
600 tons, highway bridge, Marseilles, Ill.
550 tons, Twenty-second street bridge, Two Rivers, Wis.; Worden-Allen Co., Milwaukee, low.
500 tons, high school building, Wausau, Wis.
500 tons, pier shed, Brooklyn, N. Y.
500 tons, high school, Newark, N. J.
500 tons, junior high school, Philadelphia.
400 tons, highway bridge, Keddie, Calif.
400 tons, piling, National Dock & Terminal Co. project, Camden, N. J.; indefinitely postponed.
350 tons, noncommissioned officers apartment, Fort Jay, Governors Island, New York; bids Sept. 22.
300 tons, three state bridges, Millbury, Mass.; bids open Sept. 15.
300 tons, airplane hangar and office building, Kansas City, Mo.
300 tons, highway bridge, Carmel, Ill.
300 tons, pier shed, Providence, R. I.
300 tons, high school, Chester, Pa.; A. W. Funk, Philadelphia, low on general contract.
300 tons, warehouse for Sydney Wenzer & Sons, Chicago.
250 tons, parish house and chapel for new Old South church, Boston.
250 tons, piling, jetties, Erie, Pa., for Pennsylvania state park and harbor commission; George W. Parks & Sons, Philadelphia, contractors.
225 tons, bridges for Chicago-Milwaukee highway No. 41; J. R. Griffith Co., Racine, Wis., low on complete contract at $299,565.
200 tons, South Side high school gymnasium, Milwaukee; C. Hennecke Co., Milwaukee, low.
200 tons, office building, Chicago, for Firestone Tire & Rubber Co., Akron, O.
200 tons, two air corps warehouses, Langley Field, Va.; bids Sept. 25.
180 tons, bridge over Sparrow swamp, Florence county, S. C., for South Carolina state highway commission; Ben M. Sawyer, commissioner, Columbia, S. C.; bids opened Aug. 25; Austin Bros. Bridge Co., Atlanta, low.
140 tons, state bridge, Great Barrington, Mass.
130 tons, state bridge, Uxbridge, Mass.
Unstated tonnage, piling, foundation, department of justice building, Washington; bids opening Sept. 9.

Concrete Bars

Western Roadwork Tapers —Pittsburgh Mill Shipments Better — Contractors Continue To Shop for Concessions—New Pending, 5482 Tons—Awards, 7245 Tons

REINFORCING BAR PRICES, PAGE 57

New York—Contractors with construction requiring concrete reinforcing bars continue shopping for concessions, with the result that action on several large tonnages is delayed. On small lots prices are steady. Fresh inquiry includes additional highway work in New Jersey, New York state bridges and a scattering of building work, the latter confined to smaller tonnages except in a few instances. Bids went in this week at Washington on contract for the Madden dam, Panama canal, taking 1900 tons of bars. Booth & Flinn have the contract for substructures, Shelter Island bridges, about 650 tons.

Philadelphia—Pennsylvania railroad has placed 1000 tons of concrete bars with Carnegie Steel Co., in addition to 1000 tons to the same interest the preceding month, for its Thirtieth street station. Prices are unchanged at 1.50c to 1.55c, Pittsburgh.

Pittsburgh—Activity in the reinforcing bar market continues outstanding and improvement in September business is looked for as a result of work now pending. A local contractor has placed 1200 tons for electrification work on the Pennsylvania railroad, while a Dayton, O., interest was low bidder on 2200 tons for a federal warehouse at Washington. Occasional shading is noted on large jobs while the market generally continues steady at 1.60c for mill lengths.

Cleveland—Developments point to the readvertising of bids for the Nine Mile creek sewer, the two sections of which take over 1500 tons, due to contractor difficulties. A bridge for the county, Bedford, O., is coming out. Truscon Steel Co. took 115 tons of rail steel for a school at Bexley, O.

Chicago—Building work has become more prominent, although irregular prices prevail. From 10,000 to 12,000 tons is pending here and in the northwest. With Illinois road work at a standstill, due to labor controversy, and shipments nearing completion on much of the other work in the North Central states, road projects for the season are less significant.

Awards Compared

	Tons
Awards this week	**7,245**
Awards last week	**4,816**
Awards two weeks ago	**7,731**
Awards this week in 1930	**6,663**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,998**
Av. weekly awards, August	**5,274**
Total awards to date, 1930	**247,911**
Total awards to date, 1931	**251,913**

Contracts Placed

1200 tons, Pennsylvania railroad electrification, Wilmington, Del., to Phila-

(*Concluded on Page* 65)

Strip

Improved Rate of Demand Holds—Prices Steady—Inquiry for Automotive Use Is Larger

STRIP PRICES, PAGE 57

New York—While no prices have yet been announced it is believed that strip will remain at present level for fourth quarter. Definite announcements, however, will not likely appear before another week to 10 days. Current buying is light. Hot-rolled strip is 1.55c, Pittsburgh, for wide, and 1.65c for narrow, with cold-rolled strip 2.15c.

Philadelphia—Sellers of steel strip are looking for mild improvement after Labor Day. Hot-rolled is unchanged at 1.55c, Pittsburgh, for wide and 1.65c for narrow.

Pittsburgh — Demand for steel strip holds at the slightly improved rate noted recently but activity in automotive buying is confined more to inquiry than to actual orders. A number of partsmakers are inquiring for material for Ford parts but little tonnage has been placed. Shipments to other interests in most cases continue light. Prices are steady on new business and on cold-rolled strip producers are asking $2 a ton above the usual market on small lots. Large buyers unsually pay 2.15c, Pittsburgh, with 2.25c going in some instances. Hot strip is fairly steady at 1.55c and 1.65c. Mill operations are irregular, most plants running only the latter part of the week. The average for hot mills continues around 20 per cent.

Youngstown, O.—Owing to the low rate of automotive production, usually the largest single consumer of strip, independent mills are down to the lowest production rate in months, around 20 to 25 per cent of capacity. The Republic Steel Corp. has replaced its large strip mill at Warren with two small mills and the Sharon Steel Hoop Co. has tapered its operating rate.

Sales of hot-rolled and cold-rolled strip are of small individual proportions, for quick shipment. Consumers appear to have no stocks on hand.

Cleveland—In spite of prevailing small and infrequent orders, prices for both hot and cold-rolled strip are the firmest in some time at 1.55c and 1.65c, Pittsburgh base, for wide and narrow hot and 2.15c, Cleveland minimum for cold-rolled. Building lines take only scattered lots of cold-rolled with hot-rolled volume to the stamping and automotive plants somewhat greater. Orders are largely less-carload lots. Operations at the plant of the local independent are increased this week, working five days on an accumulation of cold strip orders.

Operations' Average Down One Point to 31 Per Cent

Youngstown, O.—Ingot operations are up approximately two points to 44 per cent of capacity, bessemer production being slightly lower. Based on raw steel output, Carnegie continues at 46, Sheet & Tube is near 25 and Republic has undergone a narrow drop to 35 per cent. Sharon Steel Hoop ingot activity is up 15 points to 50 per cent. An increase in sheet production is of some interest with approximately 30 of 120 mills under power, against 24 last week. Pipe production is little changed.

	Per Cent
Operations this week	**31**
Operations last week	**32**
Operations two weeks ago	**33.5**
Operations this week, 1930	**53**
High for 1931, (March 19)	**57**
Low for 1931, (July 23)	**30**

Philadelphia—Steel production in Eastern open-hearth plants is down 1½ points this week to 30 per cent of capacity. The leading interest in this district is operating at 31 per cent, a drop of two points from last week.

Buffalo—Steelworks operations are off three points this week to 30 per cent of capacity. However this is actually a gain over the anticipated rate as it had been expected the alternate week plan of operating one local works, would cut the rate to 27 per cent. Following a general suspension over Labor Day of three to five days it is expected that production will be restored next week at about 35 per cent.

Cleveland—Based on ingot activity, district mills are unchanged with 29 per cent engagement, or a total of ten active open hearths, seven of which are independent. Strip and plate finishing mills rates are improved this week.

Pittsburgh—Ingot output is unchanged at around 30 per cent. Banking of an independent blast furnace reduces the number of active steelworks stacks to 10 of 54 in the district, the lowest rate this year. Finishing mill operations generally are steady with sheets at 30 to 35, tin plate 45 to 50, strip at 20 and pipe at 30 to 35 per cent.

Chicago—Ingot output holds at 30 per cent, while steelworks blast furnace production is limited to nine of 36 stacks. The leading interest has five furnaces blowing, the independents four. Sheet mill production has gained slightly over a week ago.

Birmingham, Ala.—With but six or seven open hearths making ingots, four for Tennessee Coal, Iron & Railroad Co., and two or three for Gulf States Steel Co., estimate of steel mills operations in the district is down two points to 28 per cent capacity.

Warehouse Sales Hold To Parity with July Total

Warehouse Prices, Page 79

Chicago—August warehouse sales about equal July. City sales, in number of orders but not in dollar value, gained slightly over July, while orders in outlying territory fell off. Prices are unchanged.

Boston—Demand holds shipment from warehouses in fair volume. The past week displayed a slightly better demand than was the case for a fortnight before.

New York—August was the low of the year with most steel warehouses. Prices are inclined to be easy.

Philadelphia — Jobbers expected August billings to be about on a parity with July. Current trading is featureless. Prices are unchanged.

Pittsburgh—A slightly improved demand is reported for warehouse materials, but August business is not expected to top that of July. Prices are firm and unchanged.

Buffalo—Warehouses feel the approaching holiday to some extent although August business generally has held close to July. Demand for galvanized sheets has featured.

Detroit—Customers' needs from stock continue to be about as numerous and in a comparable volume to the weekly rate of the past three or four weeks. Prices are unchanged.

Cincinnati—Demand for concrete bars from warehouses during the last few weeks has been maintained better than for structural material. Tonnage in August showed little variation from July. Individual orders are small.

St. Louis—Purchasing of iron and steel goods from store reflects the quietness usual at the end of summer. Prices are unchanged.

Concrete Bars Placed

(*Concluded from Page* 61)

delphia, to Truscon Steel Co., Youngstown, O., through John F. Casey Co., Pittsburgh, contractor.

1000 tons, in addition to like tonnage with same interest in July, Thirtieth street station, Philadelphia, for Pennsylvania railroad, to Carnegie Steel Co., Pittsburgh.

700 tons, harbor work, Milwaukee, to American System of Reinforcing, Chicago.

450 tons, highway, New Jersey, to Igoe Bros., Newark, N. J., through George M. Brewster & Son Inc.

400 tons, Ft. Wayne, Ind., postoffice and federal building to unstated fabricator.

400 tons, Massachusetts highways, to Concrete Steel Co., New York.

300 tons, Cashman street laundry, Gerard avenue, Bronx, New York, to Jones & Laughlin Steel Corp., Pittsburgh, through Turner Bros. Construction Co.

300 tons, mesh, road project, Fairport, N. Y., to unstated Buffalo fabricator.

265 tons, federal house of detention, El Paso, Tex., to Darbyshire-Harvie Iron & Machine Co., El Paso; Robert E. McKee, El Paso, contractor.

250 tons, storage warehouse, Hartford, Conn., to Joseph T. Ryerson & Son Inc., Chicago.

250 tons, office building, Standard Oil Co., Washington, to Concrete Steel Co., New York; James Stewart & Co. Inc., contractor.

200 tons, west side Y. M. C. A., Chicago, to Calumet Steel Co., Chicago.

165 tons, pachyderm house, Chicago zoo, to Calumet Steel Co., Chicago, previously reported as 290 tons.

165 tons, widening Third street viaduct, Tulsa, Okla., to Patterson Steel Co., Tulsa; H. L. Cannady Co., Tulsa, contractor.

150 tons, Thirtieth street station, Philadelphia, for Pennsylvania railroad, to Taylor-Davis Inc., Philadelphia.

150 tons, West Portal school, San Francisco, to W. S. Wetenhall Co., San Francisco.

150 tons, hospital, Fort Jay, Governors Island, New York harbor, to Truscon Steel Co., Youngstown, O.; Supreme Construction Co., contractor.

150 tons, four buildings for sewage treatment plant, Phoenix, Ariz., to unnamed interest.

135 tons, Garland court substation for Commonwealth Edison Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

120 tons, electrical buildings, Century of Progress exposition, Chicago, to Inland Steel Co., Chicago.

115 tons, rail steel, school, Bexley, O., to Truscon Steel Co., Youngstown, O., through Robert H. Evans Co., Columbus, contractor.

110 tons, Erie railroad passenger station, Jamestown, N. Y., to unstated Buffalo fabricator.

100 tons, veteran's hospital, Tucson, Ariz., to unnamed interest.

100 tons, Massachusetts highways, to Truscon Steel Co., Youngstown, O.

100 tons, Union market building, Washington, to Rosslyn Steel & Cement Co., Washington.

100 tons or more, shapes and bars, state highway bridges, New York, to Kalman Steel Corp., division, Bethlehem Steel Co., Bethlehem, Pa.; Kenneth Premo, Messina, N. Y., contractor.

100 tons, infirmary, state hospital, Norwich, Conn., to Topper & Griggs, Hartford, Conn.; Pierretti Bros., Centerbrook, Conn., contractors; also 35 tons structural steel.

100 tons, addition to bird house, Chicago zoo, to Kalman Steel Corp., division Bethlehem Steel Co., Bethlehem, Pa.

100 tons, state bridges, Calhoun, Jackson and Matagordia counties, Texas, to Alamo Iron Works, San Antonio; Monarch Engineering Co., San Antonio, contractor.

100 tons, Erie railroad station, Jamestown, N. Y., to Kalman Steel Corp., division Bethlehem Steel Co., Bethlehem, Pa., through Winston Bros., Minneapolis.

Contracts Pending

2200 tons, federal warehouse, Washington; H. R. Blagg, Dayton, O., low.

875 tons, public school, Fifty-ninth street, Philadelphia; bids opened Sept. 1.

375 tons, highway and bridges, route 10, section 3, Whippany to route 5, Morris county, New Jersey; bids Sept. 16, board of freeholders, courthouse, Morristown, N. J.

255 tons, San Gabriel river outlet for Los Angeles county, Calif.; bids Sept. 8.

250 tons, hospital, 2301 Bellevue avenue, Los Angeles; bids being taken.

200 tons, high school, Pottsville, Pa.; bids opened Sept. 2.

200 tons, state bridges, Maryland; bids open Sept. 8.

190 tons, intercepting sewer, Columbus, O., also 22 tons cast iron and steel; bids Sept. 8.

183 tons, bridge, Weston's Mill pond, route S-28, section 1A, New Brunswick, N. J.; bids Sept. 14, New Jersey state highway commission, A. Lee Grover, chief clerk.

175 tons, bridges, Washington and Hampton, N. J., Delaware, Lackawanna & Western railroad; Rust Engineering Co., Pittsburgh, contractor.

175 tons, buildings and hangars, Mitchel Field, Long Island, N. Y.

140 tons, highway, route S-29, section 2, Tanners corner Rue's lane, Middlesex county, bids Sept. 14, New Jersey state highway commission, A. Lee Grover, chief clerk.

125 tons, state highway bridge, Texas; Field Bros. & McCelvey, Lubbock, Tex., contractors.

125 tons, bridge over Enoree river, route 56 near Musgrove hill, for South Carolina state highway commission; Ben M. Sawyer, commissioner, Columbia, S. C.; bids opened Aug. 25. Work also includes 81 tons structurals; George A. Thomason & Co., Greenwood, S. C., low on general.

114 tons, bridge over Sparrow swamp, Florence county, S. C., for South Carolina state highway commission; Ben M. Sawyer, commissioner, Columbia, S. C.; bids opened Aug. 25; Austin Bros. Bridge Co., Atlanta, low.

100 tons, office building, Tenth & N streets, Sacramento, Calif.; bids being taken.

Unstated tonnage, plant for Consolidated Cigar Co., Philadelphia; bids opening Sept. 12.

Unstated tonnage, postoffice, Rockford, Ill., bids on general contract in about 30 days.

Steel Founders' Society Issues 1931 Directory

Steel Founders' Society of America Inc., 420 Lexington avenue, New York, has issued its 1931-32 directory of manufacturers of steel castings and heat-corrosion resistant alloy castings in the United States and Canada. Statistical information is given on all producers within this classification. The foundries also are listed by states. The program of the Steel Founders' Society and a great deal of statistical data also are included in the directory, which is listed at $10.

Pipe

Stanolind Inquiry, 39,000 Tons, Will Be Let This Week—Cast Easier in New York, South

PIPE PRICES, PAGE 79

New York—Cast inquiry is heavier, but prices still sag. Several hundred tons in the New York territory went close to $28, delivered, a low in the long and steady decline. Lettings approach 5000 tons. Close to 2000 tons are pending for New Jersey points, including tonnages for Boonton, Bloomfield and East Brunswick. New Lork City is about to inquire for about 2200 tons of 30-inch for Manhattan.

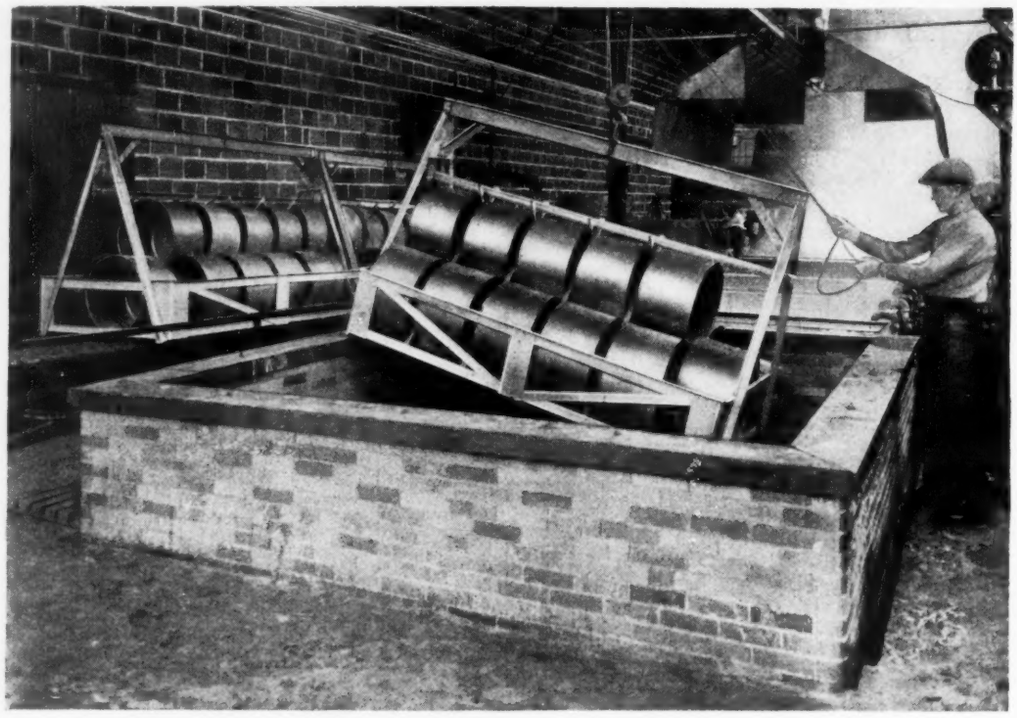
Boston—Municipal buying appears at a standstill for some few weeks ahead. Prices are irregular.

Buffalo—Elmira Natural Gas Corp. has completed plans for drilling five wells in the Portville field. Pipe line construction of a major nature is involved.

Pittsburgh—Action will be taken this week on the inquiry of the Stanolind Pipe Line Co. for 39,000 tons of line pipe. Other proposed work, consisting mostly of small lots, remains to be placed. No other large lines are expected in the market during the remainder of the year. Activity in other tubular products is unchanged.

Chicago—Public utility inquiry in the cast pressure pipe market is for 300 to 500 tons of pipe and fittings. About 500 tons of scattered municipal work is active in Ohio. Prices for the larger diameters range at $40 to $43, delivered, which represents an increase over recent prices. A part of the 2500 tons of various sizes for the Calumet sewage treatment works has been purchased through a construction company.

Birmingham, Ala.—The market is quiet, with production at 40 to 50



Monel Metal baskets for pickling drawn steel tubs of domestic washing machines at Salem, Ohio, plant of Mullins Mfg. Corp. This modern pickling department is part of complete layout for annealing, pickling and porcelain enameling of sheet steel ware designed and installed by The Ferro-Enamel Corp. of Cleveland. The Monel Metal pickling baskets were fabricated by The Weaver Bros. Co., Cleveland.

No. 33
Pickling Equipment that passes the test of service

Modern enameling plants have discovered the economy of long-lived **MONEL METAL** *pickling equipment...*

● Experienced manufacturers of enameled products will tell you that many problems formerly encountered in the preparation of metal surfaces have been largely overcome or entirely eliminated by the use of Monel Metal pickling equipment.

They will tell you that Monel Metal insures a clean, uniform surface that saves costly repickling... that Monel Metal gives freedom from "copper flash"—one cause of blistering in firing enamel ware... that Monel Metal's steel-like strength and corrosion-resistance fortify equipment against the need for frequent shut-downs and repairs.

Since Monel Metal is a high Nickel alloy, it is practically immune to corrosion embrittlement and fatigue. It has a uniform rolled structure that withstands the strain of heavy loads, thus minimizing the danger and expense of unexpected breakage.

This rare combination of properties together with its ready adaptability to the most highly specialized requirements is responsible for Monel Metal's use in all types of pickling equipment. Hot rolled Monel Metal is available in all standard shapes for pickling equipment service. If you need assistance in planning the fabrication of special Monel Metal pickling equipment, our engineers will be glad to help you.

A HIGH NICKEL ALLOY

MONEL METAL

NICKEL ALLOYS PERFORM BETTER LONGER

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

INCO MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

per cent. Six-inch and over sizes are now quoted $33 to $35 a ton.

Cast Pipe Placed

2000 tons, 6 to 12-inch, Wayne township, N. J., to R. D. Wood & Co., Florence, N. J.

1000 tons, 6 to 12-inch, Long Lake, N. Y., to R. D. Wood & Co., Florence, N. J.

550 tons, 12-inch, Yonkers, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.

400 tons, 6 to 12-inch, Thornwood, N. Y., to R. D. Wood & Co., Florence, N. J.

400 tons, 4, 6 and 10-inch class 150 centrifugal for Elma, Wash., to United States Pipe & Foundry Co., Burlington, N. J., through H. G. Purcell, Seattle.

300 tons, 4 to 8-inch pipe, Williamsburg, O., to McWane Cast Iron Pipe Co., Birmingham, Ala.

225 tons, 2 to 8-inch pipe, Grayson, Ky., awarded through contractor.

200 tons, 2 to 6-inch pipe, Hartley, Iowa, to Central Foundry Co., Ft. Wayne, Ind.

134 tons, 4 and 6-inch class B, Austin, Nevada, to unnamed interest.

Steel Pipe Placed

10,000 to 15,000 tons, steel pipe, for Metropolitan Square building project, Fifth and Sixth avenues, Forty-eighth to Fifty-first streets, New York, to National Tube Co., Pittsburgh; award was mentioned in STEEL, Aug. 27, as involving 125 miles; no wrought pipe is included, contrary to first reports.

200 tons, 18 and 25-inch welded steel pipe, Los Angeles, to Western Pipe & Steel Co., Los Angeles.

150 tons, 6 and 8-inch 10 gage, for La Conner, Wash., to Crane Co., Seattle.

100 tons, valves and accessories, for Yakima, Wash., to Crane Co., Seattle.

Cast Pipe Pending

4885 tons, 8 and 12-inch class 150, Los Angeles; bids Sept. 3.

2200 tons, 30-inch, Manhtatan (New York); inquiry about to be made.

1200 tons, 6 to 12-inch, Lathams, N Y.; bids next month.

1000 tons, estimated, various sizes, North Creek, N. Y.

600 tons, 12 to 20-inch, Ridgway, Pa.; bids Sept. 8.

500 tons, mostly 6-inch, East Brunswick, N. J.

500 tons, up to 14-inch, Boonton, N. J.

465 tons, 6 to 12-inch class 150, Helena, Mont.; bids to be called for soon.

300 tons, 6 to 16-inch, state prison, Dannemora, N. Y.

250 tons, various sizes, Phoenix, N. Y.

200 tons, 24-inch, for Lorain, O.; bids in.

100 tons, 6 and 8-inch, Bloomfield, N. J.

Unstated tonnage, 6900 feet, welded wrought iron pipe, navy department, Norfolk, Va., Thomas Somerville Co., Washington, low, $2631.80.

Steel Pipe Pending

4000 tons, 25 miles of 36-inch water pipe for Lincoln, Nebr.; bids called for.

3500 tons, 12 ¾-inch, foundation for interstate commerce commission building, Washington; McCloskey & Co., Philadelphia, low.

400 tons, 36 to 75-inch welded steel pipe, Hetch Hetchy project, San Francisco, Steel Tank & Pipe Co., Berkeley, Calif., low.

200 tons, 50 lengths, 32-inch pipe for United States engineers, Memphis district; bids open Sept. 11.

Wire

Chicago Mill Shipments Equal July—At Pittsburgh August Was Lowest Month of Year

WIRE PRICES, PAGE 57

Chicago—August wire products shipments equalled July, while sales were slightly ahead. Hopes of increased merchant wire sales exist for several western districts, where jobbers have been ordering out a little material recently. The price for nails is nominal at $1.90 to $1.95, Chicago or western mills. The base for plain wire is 2.25c, mills. Some manufacturers' wire is being ordered for October.

Worcester, Mass.—August showed slightly better production than July. Road construction and building projects getting under way are expected to give the local markets some support.

New York—Pending contracting for next quarter the wire nail market is quiet. Announcement as to fourth quarter prices is expected within a fortnight. Meanwhile nails are quoted $1.90, Pittsburgh, with some sellers endeavoring to obtain $2 from the manufacturing trade. Plain bright wire is 2.20c, Pittsburgh.

Cables for two bridges over Shelter Island sound will take approximately 1080 tons of cold-drawn wire strand. There will be four cables, two of 61 strands and two of 37. Wire will be 0.199 in diameter and each strand 1 7/16th inch. John A. Roebling's Sons Co., Trenton, N. J., is low bidder.

Pittsburgh—Demand for wire products shows no improvement and the month's business is expected to mark the lowest level of the year. Activity in wire rods continues restricted by quiet in automotive operations. Prices are firm on new business, although a thorough test of quotations is not expected until October, when present contracts at lower prices will expire. Wire nails are quoted $1.90 to jobbers with plain wire 2.20c and wire rods $35.

Bolts, Nuts, Rivets Slow; Prices Fairly Steady

Bolts, Nuts, Rivets Prices Page 57

Pittsburgh—Quotations on structural rivets remain firm at 2.75c, Pittsburgh and Cleveland. Some attempts are reported to bolster the bolt and nut market but the current quotation of 73 and 10 off appears to be only fairly steady. Demand shows little or no improvement, particularly on the part of railroads and equipment builders. Automotive specifications also are light.

New York—While eastern bolt and nut production continues at 25 to 30 per cent, the local office of one large seller reports a 25 per cent increase in August tonnage over July. Some leading sellers are adhering to 73 and 10 off, but shading is noted in some quarters. Rivets are firm at 2.75c, Pittsburgh. The Pennsylvania railroad has awarded 100 tons of bolts and anchor rods for electrification work at New Brunswick and Newark, N. J., to a Pittsburgh manufacturer.

Cleveland—August specifications for bolts and nuts displayed a significant gain over July, being some 15 to 20 per cent greater for a leading interest here. Despite the fact that demand is generally featureless some government work is being figured on and a recent navy order was closed with a local plant. Prices hold at 73 and 10 off list.

Chicago—Small and large rivets remain fairly steady, the latter at 2.85c, Chicago. Bolts and nuts are quoted 73 and 10 off. Specifications are decidedly slow with no immediate promise of gains.

Steel Constructors To Hold Meeting in October

American Institute of Steel Construction announces that its ninth annual convention will be held at the Greenbrier hotel, White Sulphur Springs, W. Va., Oct. 28-30, the meeting this year consuming only three days instead of the customary five. Morning and afternoon sessions will be devoted to formal addresses by members of the industry; luncheon and dinner meetings, however, will give geographical groups an opportunity to consider mutual problems.

Because of the changes which have taken place in industry during the last year, the institute will make an appeal for the whole industry to join in the conference. Institute membership is limited to plants fabricating and erecting structural steel, but others interested in structural steel markets will be invited to attend the White Sulphur Springs meetings.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	16.76 to 17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.90 to 20.40
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.90 to 21.40
Buffalo, all-rail Newark	18.78 to 19.28
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.25
Eastern, del. Phila.	17.26 to 17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	17.76 to 18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.41
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	16.75
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur. in per cents: 6—$20; 7—$20.50; 8—$21; 9—$21.50; 10—$22; 11—$23; 12—$24; 13—$26.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$24; 16—$33.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00 to 36.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

•Ferromanganese, 78-82%, tidewater, duty paid	$85.00
•Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
•To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.00
Washed gravel, import duty paid east. tide, gross ton	18.50 to 19.00

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A Specially Produced Non-Flaking Zinc Coated Sheet of Superior Quality

THIS product can be formed with dies and in brakes without injury to coating, and fulfills the demands of those who desire a zinc coated sheet upon which paint or lacquer will readily adhere. The zinc is applied by a special process insuring

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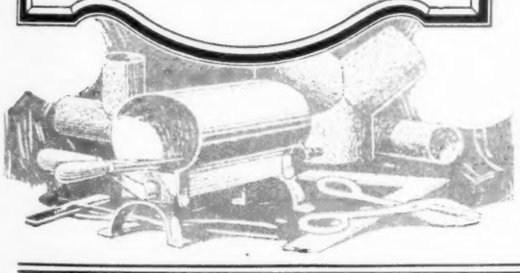

AMERICAN GALVANNEALED is particularly adapted for road signs, mouldings, sash, corner beads, columns, sign boards, and similar uses. Also supplied from KEYSTONE Copper Steel.

AMERICAN ZINCOAT REFINED and AMERICAN ZINCOAT REFINED POLISHED, made of KEYSTONE Copper Steel and specially produced to insure a correct coating with a fine surface. Recommended where an exceptionally smooth sheet and high rust resistance are desired.

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GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

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Pig Iron

Shipments to Automotive Industry Improving—Southern Iron Lower in Eastern Market

PIG IRON PRICES, PAGE 68

Pittsburgh—Demand for pig iron is dull. Jobbing foundries are ordering sparingly while activity at other plants lacks improvement. August shipments and new business dropped to a new low level for the year. Operations at radiator and sanitary ware plants remain slightly above the general average. Sellers usually quote $17, base, valley, for No. 2 foundry, malleable, basic and bessemer, though the market is not tested, except for small lots.

Boston—Foundries are short of iron, but order only carloads at a time. No inquiries for substantial amounts are pending. About 1200 tons was sold in this district in the past week.

New York—Approximately 3500 tons of pig iron was sold here in the past week, with spot orders predominating. While active inquiry is estimated at 2000 tons there is a considerable amount of informal inquiry. Prices generally are steady. Although shading is reported in at least one other district southern iron appears steady here at $11, base, furnace.

Philadelphia—Shading of 25 cents a ton on the price of Alabama iron is noted here, the first break since $11, base, was established several months ago. The price delivered to Philadelphia docks now is $16 to $16.25. Eastern Pennsylvania iron is unchanged at $16.76 to $17.26, delivered Philadelphia. Silicon differentials frequently are waived.

Buffalo—Buffalo producers report booking two lots of foundry iron, aggregating 500 tons, for shipment in this state, also a growing volume of 50 and 100-ton orders. Sales for eastern shipment are increasing slowly. Four furnaces are making iron this week, with one banked for ten days.

Youngstown, O.—Pig iron sales continue small. The quotation of $17, valley, holds on No. 2 malleable, basic and bessemer. Occasional sales of low phosphorus iron are noted at $27, valley.

Cleveland—Producers look confidentally to a larger demand for pig iron this month. Indications point to increasing consumption by the automotive industry, and shipments to this group already have started on the upgrade. Machine tool builders also are taking more iron. The improvement so far noted mainly in the western Ohio, northern Indiana and lower Michigan areas. One merchant furnace interest serving that territory shipped 15 per cent more iron in August than in July. Sales by furnace interests with headquarters in Cleveland amounted to 5000 tons in the past week, compared with 3000 tons in the week preceding. A Cleveland producer, to offset the quiet market in this city, has been selling extensively in outside districts. The Cleveland base of $16 for outside shipment has not been held so firmly, sellers absorbing more freight. In Cleveland and vicinity the small lots placed generally bring $17, base furnace.

Cincinnati—Pig iron orders during the past week totaled nearly 1500 tons. An Indiana foundry inquired for 300 tons of northern iron, and bought 600 tons. New business is almost entirely in carload and 100-ton lots.

Chicago—Pig iron melters are cautious in making commitments for fourth quarter. While a small amount has been placed for that period, inquiry is light. Several foundries will resume in part after Labor day. A large implement plant is expected to operate in December. A St. Paul foundry has purchased 200 tons for fourth quarter. Northern iron remains quiet at $17.50, Chicago, for the base grades. Several carload orders of southern iron have been placed at $11, base, Alabama furnace. Northern merchant production is slightly under 50 per cent.

St. Louis—A more hopeful spirit prevails among pig iron producers due to reports that several foundries plan to increase operations by the middle of September. Jobbing foundries which have taken a larger volume of business recently have arranged for heavier shipments. August shipments in this district were slightly below July, and the melt was the lowest of the year. Sales in the past week totaled 1200 tons, including one lot of 350 tons to an Iowa consumer for the last quarter. Normally this interest takes 1200 to 1500 tons.

Toronto, Ont.—Melters adhere strictly to a hand-to-mouth buying policy, and the volume of business shows no change. Prices are steady.

Birmingham, Ala.—Practically all orders are for single carloads, and little business has been received recently from outside districts. Eight blast furnaces are operating, but production will be further reduced. The base price holds at $12, furnace, for local delivery, and generally $11 for outside shipments.

Ferromanganese Demand Expected To Improve

Ferroalloy Prices, Page 68

New York—Aside from an inquiry for 100 tons for a middle western consumer, spot demand for ferromanganese is slack. Specifications on contracts are coming out slowly, although sellers are looking to this month to bring about at least a mild improvement. Ferromanganese in carlots continues at $85, duty paid. Domestic spiegeleisen, 19 to 21 per cent, is moving at $30, furnace.

Special ferroalloys continue dull, and prices are unchanged. There is nothing to indicate any more than the seasonal trend for September. The tungsten market continues purely nominal.

Semifinished Orders Light; Stocks Low

Semifinished Prices, Page 68

Pittsburgh—Semifinished steel orders and shipments are lighter than a month ago, and little improvement is in prospect in the near future. Consumers have low stocks and are ordering small lots as required. Orders for rerolling billets, slabs and sheet bars usually are placed at $29, forging billets and wire rods continuing at $35.

Philadelphia—The market for billets is quiet, at $29, Pittsburgh, for rerollers and $34 for forging quality.

Youngstown, O.—Only small lots of billets and sheet bars are moving from producing mills to consumers. Billets, sheet bars and slabs bring $29, Youngstown and Pittsburgh.

Cleveland—Shipments of semifinished steel have increased slightly, as evidenced by the fact the leading merchant producer here has put on another open hearth, now operating four of its 14 units. Little business is being done on contract, customers ordering as required, and billed at the current market, $29, base, Cleveland, or Youngstown, O., for sheet bars, billets and slabs.

Chicago—Semifinished steel shipments are keeping pace with recent averages. Buyers are using all available supplies before ordering. Forging billets are quiet, prices ranging at $35 to $36, Chicago. Small billets, 4 x 4-inch, base, are $30, Chicago.

Scrap

Producers Holding Stocks More Closely, but Prices Sag Further —Little Buying Being Done

Chicago—Industrial scrap producers and western railroads are holding more closely their iron and steel scrap accumulations, creating a more favorable outlook. Forward buying is at a standstill, and few indications appear of renewed activity among foundries. Heavy melting steel is nominal at $8 to $8.50. Several specialty and iron rolling mill grades have dropped $1 a ton, but these revisions have been made largely to equalize differentials established by recent declines in other grades. No. 1 railroad wrought is down 25 cents, on the basis of a sale at $7.50, delivered. Santa Fe released about 2000 tons, and Chicago & North Western's monthly list, now before the market, usually about 3000 to 4000 tons, is less than 1500 tons. A Milwaukee district fabricator has a large quantity

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.50 to 5.00
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.75 to 8.25
Chicago	8.00 to 8.50
Cinn., deal.	7.50 to 8.00
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	7.50 to 8.00
Det., No. 1 deal.	7.00 to 7.50
Det., No. 2 deal.	6.00 to 6.50
E. Pa. del. mill	8.00 to 9.00
N. Y. deal. R. R.	5.00 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.50 to 11.00
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.75 to 8.25
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	10.50 to 11.00

COMPRESSED SHEETS

Buffalo, dealers	7.75 to 8.25
Chi., (Factory)	7.00 to 7.50
Cleveland	7.50 to 7.75
Detroit, dealers	6.50 to 7.00
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	10.50 to 11.00
Valleys	10.00 to 10.50

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	6.50 to 7.00
Pittsburgh	9.25 to 9.75
St. Louis	5.00 to 5.50

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	4.00 to 4.50
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	10.75 to 11.50
Boston, dealers	3.00 to 4.50
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	12.50 to 13.00
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	13.00 to 13.50
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	6.50 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	8.25 to 8.50
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.25 to 9.75
Eastern Pa.	13.00
Pittsburgh	12.50 to 13.00
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	9.25 to 9.75
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75 to 13.25
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	8.00 to 8.50
Cleveland	6.50 to 7.00
St. Louis	7.75 to 8.25

RAILROAD WROUGHT

Birmingham	7.50 to 8.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	8.00 to 8.50
Cinci., No. 2	7.50 to 8.00
Eastern Pa.	9.50 to 10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.75 to 8.25

SPECIFICATION PIPE

Boston	5.00 to 5.25
Eastern Pa.	10.00 to 10.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.75 to 8.25
Chicago, No. 1	6.75 to 7.25
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	6.25 to 6.75
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.50 to 10.00

MACHINE TURNINGS

Birmingham	3.50 to 4.50
Boston, dealers	1.50 to 1.75
Buffalo	4.75 to 5.25
Chicago	4.25 to 4.75
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	4.00 to 4.50
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	3.00 to 3.50
Valleys	8.00 to 8.25

BORINGS AND TURNINGS For Blast Furnace Use

Boston	1.50 to 1.75
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.50
Boston, chem.	7.00 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.25 to 4.75
Cinn., deal.	3.75 to 4.25
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.50 to 6.00

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.00 to 11.50
Eastern Pa., del.	8.00 to 8.50

ARCH BARS, TRANSOMS

Chicago, net	9.00 to 9.50
St. Louis	7.75 to 8.25

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	7.00 to 7.50
Cleveland	6.75 to 7.00
Eastern Pa., del.	7.50 to 8.50
Pittsburgh	9.50 to 10.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	14.50 to 15.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.95 to 9.50
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	18.00

CAR WHEELS

Birming., iron	8.50 to 9.50
Boston, iron	14.00 to 14.50
Buffalo, iron	10.50 to 11.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi. rolled steel	9.50 to 10.00
Cincinnati, iron	10.00 to 10.50
E. Pa. steel	10.50 to 11.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	11.00 to 11.50
Pitts., steel	12.50 to 13.00
St. Louis, iron	7.00 to 7.50
St. Louis, steel	8.50 to 9.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.50
Buffalo (mach.)	10.00 to 10.50
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L. No. 1	7.50 to 8.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast.	11.50 to 12.50
Buffalo, break	6.50 to 7.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 10.50
N. Y. No. 1 dl.	7.00 to 7.50
N. Y., break, dl.	6.50 to 7.00
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	8.00 to 8.50
Chicago, R. R.	8.50 to 9.00
Cinci., R. R. del.	10.50 to 11.00
Cinci., agri. del.	10.50 to 11.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	10.00 to 10.50
St. Louis, rail	6.75 to 7.25

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	7.00 to 7.50
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.00 to 11.50
St. L., No. 1	9.50 to 10.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	12.50 to 13.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

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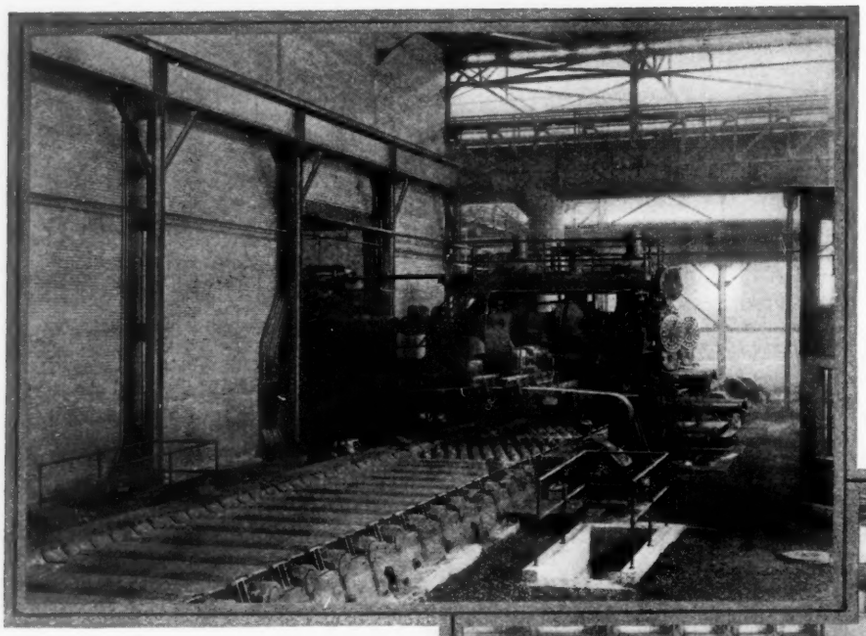

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THIS mill is successfully rolling universal wrought iron plate and 84″ sheared plate with vertical rolls removed. All Tables, Transfer, Hot Bed and Shears were designed and built by Morgan.

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Table rollers, drive shafts, etc., are provided with roller bearings, thus reducing maintenance to the minimum.

Write for Bulletin No. 16

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of scrap which may not be released for some time.

Boston—There was no change in prices of scrap the past week but Pittsburgh mills took several cars of heavy melting steel, heavy cast and rails, the last few days. This is the first indication of any seasonal pick-up. Foundries are practically at a standstill in the matter of buying.

New York—Most No. 1 scrap for barge shipment to the Buffalo district is being bought at $6.50, dock. Several thousand tons for an eastern Pennsylvania mill moved at $9, delivered. Reports of $8.50 being done in that district are unconfirmed, scrap at this reported quotation not having been purchased in the New York market. Heavy breakable cast has sold at $10, eastern Pennsylvania, while the Florence, N. J., foundry is reported to have bought at $9.50. Dealers' buying prices on this grade are 50 cents lower while specification pipe is also off the same amount. Mills continue to buy sparingly.

Philadelphia—Steel and iron scrap is moving slowly. A Pencoyd, Pa., consumer has placed a round tonnage of heavy breakable cast at $10, delivered, while a Coatesville, Pa., melter is taking shipments against a recent order for several hundred tons at $10.50. Shipments to Conshohocken, Pa., have been banned. Forge scrap is easier at $8 to $8.50, delivered consumer. The Seaboard Air Line is offering 32,000 tons Sept. 8. The largest items include 10,000 tons unprepared scrap, 7000 tons of wheels and 3500 tons of axles. Most of this probably will be disposed of to southern users.

Buffalo—No. 2 heavy melting steel has sold in fair lots at $8 to $8.25, delivered at district plants. Bethlehem, offering only $7.50, was not involved. Dealers say these sales indicate advancing trend and that scrap cannot be purchased at former nominal quotations. Deliveries on contracts will not begin until after Labor Day, small yard operation being expected until then.

Cincinnati—Purchases of iron and steel scrap by consumers are at a low mark. The price is somewhat dependent on bidding for scrap lists of the Big Four, New York Central, Baltimore & Ohio, and Pennsylvania railroads this week. Quotations are considered nominal.

St. Louis—Dullness and easier prices characterize the market for iron and steel scrap. The movement from dealers hands is restricted and new purchasing is small.

Birmingham, Ala.—Inactivity and low prices on iron and steel scrap continue. Melters of heavy melting steel are not manifesting interest, having purchased a little stock during the past few weeks. Railroads still offer old material.

Toronto, Ont.—Practically no change has developed in the iron and steel scrap markets. Heavy melting steel and turnings are in small demand with mills taking only small deliveries from dealers. Iron grades, however, have a steady call with some fair inquiries for machinery cast. Dealers are out of the market and prices are unchanged.

Pittsburgh—The tone of the steel and iron scrap market tends to easiness. Additional buying of moderate lots of heavy melting steel has been done at $10.50 to $11. Compressed sheets are unchanged. Buying is slow as mills are interested only in small lots and some grades are inactive. Hand bundled sheets are stronger while railroad specialties are easier. The Pennsylvania list, offering 18,-)00 tons, is the smallest in years.

Cleveland—Activity in the iron and steel scrap market continues restricted with only blast furnace scrap and a few foundry grades being shipped to local consumers. Quotations are holding unchanged following the declines in compressed sheets and No. 2 steel last week. No steelworks purchases have been reported for some time and little prospect of an early buying movement is in prospect.

Fuchs & Lang Mfg. Co., Rutherford, N. J., has discontinued its foundry.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Furnace and Foundry Demand Shows Little Change—Market for Domestic Fuel More Active

COKE PRICES, PAGE 68

Pittsburgh—Shipments of beehive coke are unchanged. A slight gain is noted in requirements for water gas producers but foundries are light buyers. Standard furnace coke is fairly steady at $2.40, minimum, and foundry fuel is $3.25 with higher sulphur coke at less.

Boston—Little change is noted in the coke market, foundries continuing to operate at a slow rate. Shipments occasionally are deferred. By-product foundry coke is $9.75, delivered in the switching zone of this city, with additional freight added to outside points.

New York—The next two or three weeks are expected to bring an increase in foundry melt in this district. Buying is spotty, with beehive furnace coke holding at $2 to $2.25, Connellsville, Pa., and standard grades of beehive foundry coke at $3 to $3.25, the lower price being the more general. Premium brands are $4.50, Latrobe, Pa., equivalent to $4.70, Connellsville. By-product coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

The navy will open bids Sept. 15 on 1140 tons of foundry coke for various yards, including 400 tons for Philadelphia.

Cincinnati—Specifications for by-product foundry coke in August were slightly larger than in July. Prices are steady. Domestic grades were more active in anticipation of a 25-cent increase effective this week, making the wholesale quotation on domestic nut and egg sizes $5.50, delivered Cincinnati.

St. Louis—Contracting for fall and winter requirements is slow, the total tonnage booked being the smallest for this period in a number of years. Current specifications are light. Deliveries of domestic coke are fair.

Birmingham, Ala.—Production has been further reduced, only half of the 1390 ovens in this district now operating. Business is quiet and independents especially are making efforts to curtail stocks.

Pacific Coast

Close Bidding on Structurals—Public Works Give Most Tonnage—Steel Capacity May Be Reduced to Match Demand—Large Cast Pipe Inquiry Appears—Prices Are Weak

Seattle—The general situation in the Pacific Northwest with reference to iron and steel remains unchanged although this week was featured by the award of several contracts. Public works projects lead, industrial activity being slow. The trade is largely marking time hoping for improvement as the fall season advances.

Pacific Coast Steel Corp. has postponed construction of a proposed steel warehouse at the Seattle plant. Foundations have been completed.

Bars, Plates and Shapes

Close figures featured bidding on the structural contract, approximately 2700 tons, for the superstructure of the Seattle federal building, award for which went to the Isaacson Iron Works, Seattle. The local plant will both fabricate and erect the steel frame, according to C. W. Cook, manager structural department. Delivery will begin in 70 days and will be completed three months thereafter. Isaacson submitted the lowest bid which was only ½ of 1 per cent below the next proposal. Award of 300 tons of reinforcing for the same job will be made shortly.

Isaacson Iron Works has also obtained a contract to furnish 200 tons of structurals involved in the addition to the state penitentiary at Walla Walla, Wash. J. T. Hulin, Spokane, has the general contract.

Pacific Coast Steel Corp. may close its open-hearth furnaces at the Seattle plant next month unless demand increases, filling orders out of stock.

While plates are not active, two projects calling for nearly 1000 tons are up for prompt decision. About 700 tons will be required for the tunnel on the Cle Elum, Wash., government dam project, general contract awarded to Winston Bros., Minneapolis. United Water Co., Wenatchee, Wash., will open bids this week for 18 to 28-inch irrigation pipe line, involving 210 tons. The job calls for 10,000 feet.

Hofius Steel & Equipment Co., Seattle, this week received the contract to fabricate 526 tons of structurals for two state bridges over the Yakima and Paches rivers, Yakima county, Wash., general contract to D. Nygren, Seattle. Puget Sound navy yard is receiving bids for furnishing small tonnages of iron and steel welding bars, flat and round black bar steel, bolt material and carbon tool steel.

Finished Material

Jobbing houses report a limited demand for both mill and warehouse goods, purchases being in small lots.

The Tacoma street railway system has written specifications for five 500-kilowatt rectifiers and other equipment to cost nearly $100,000. The reclamation bureau will receive bids Sept. 11 at the Denver office for furnishing hydraulic and electrical apparatus for the Prosser power plant and Kennewick Highlands pumping unit, state of Washington.

Pipe Awards Are Small

The largest award of the week, 400 tons of 4, 6 and 10-inch centrifugal cast iron pipe for Elma, Wash., was taken by United States Pipe & Foundry Co. through H. G. Purcell, Seattle. For the water system at La Conner, Wash., Crane Co., Seattle, received the contract to furnish 150 tons or 27,700 feet of 6 and 8-inch 10 gage steel pipe. The Pacific States Cast Iron Pipe Co. booked 37 tons of cast iron pipe for the same project. In addition to awards noted last week for the Yakima, Wash., water improvement, Crane Co., Seattle, will furnish 100 tons of accessories. Helena, Mont., is calling bids for furnishing 320 tons of 6 to 12-inch precaulked cast iron pipe. V. N. Kessler is city clerk.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Large Pipe Inquiry Out

San Francisco—*(By Air Mail)*—Activity in Pacific Coast markets for iron and steel products continues quiet. Sales were not numerous this week and new inquiries were confined for the most part to unimportant tonnages. The largest new inquiry involves 4885 tons of cast iron pipe for Los Angeles. Prices have shown little signs of strengthening and low prices prevail in several lines.

Bars, Plates and Shapes

Merchant bar demand is confined to small lots and prices remain weak at 2.05c, c.i.f. coast ports. W. S. Wetenhall Co. booked 150 tons for a school in San Francisco and unnamed interests took 150 tons for four buildings for a sewage treatment plant in Phoenix, Ariz., and 100 tons for a veterans' hospital in Tucson, Ariz. Among the new inquiries are 255 tons for the San Gabriel river outlet project for the Los Angeles county flood control district. No change in out-of-stock prices is noted. In the Los Angeles district 2.50c, base, on carload lots, prevails while San Francisco district quotations are firm at 2.60c, base.

The Minneapolis Moline Power Implement Co. booked over 500 tons of plates for a penstock for the California Oregon Power Co., Central Point, Oreg. Los Angeles placed 200 tons of 18 and 25-inch welded steel pipe with the Western Pipe & Steel Co. The Steel Tank & Pipe Co., Berkeley, Calif., was low bidder on 400 tons of 36 to 75-inch welded steel pipe for the Hetch Hetchy project, San Francisco. Bids are expected to be called for at once for 25 miles of 36-inch welded steel pipe for a water pipe line for Lincoln, Nebr., involving over 4000 tons. Prices continue to range between 1.85c and 1.95c, c.i.f.

The Consolidated Steel Corp. booked 500 tons of shapes for car underframes for the Pacific Fruit Express Co., San Francisco, and 125 tons for a cotton gin plant at Corcoran, Calif. No new inquiries of importance came up for figures during the week. Plain structural shapes range between 2.05c and 2.15c, c.i.f.

Other Finished Material

An unnamed interest has booked 134 tons of 4 and 6-inch Class B pipe for Austin, Nev. The United States Pipe & Foundry Co. was low bidder on 136 tons of 6 to 12-inch class 150 pipe for Monrovia, Calif. Bids are expected to be called for within the next few days on 465 tons of 6 to 12-inch Class 150 pipe for Helena, Mont.

The Pacific Coast Steel Corp. booked 450 tons of 122-pound girder rails for the Market Street Railway, San Francisco. Los Angeles county will open bids Sept. 8 for 104 tons of 65-pound relaying rails.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron	
In.	Blk.	Gal.	In.	Blk. Gal.
⅛	58	44½	⅛–¼	23 5
¼	62	50½	¾	28 11
1—3	64	52½	1—1¼	31 15
			1½—2	35 18

LAP WELD

2	57	45½	2	23 9
2½—6	61	49½	2½—3½	28 13
7—8	58	45½	4—6	30 17
9—10	56	43½	7—8	29 16
11—12	55	42½	9—12	26 11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13 +48
¼	60	49½	½	23 7
1—1½	62	51½	¾	28 12
2—3	63	52½	1—2	34 18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29 13
2½—4	59	48½	2½—4	34 20
4½—6	58	47½	4½—6	33 19
7—8	54	41½	7—8	31 17
9—10	47	34½	9—12	21 8
11—12	46	33½		

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$33.00 to 35.00
Four-inch, Birmingham	39.00 to 40.00
Four-inch, Chicago	43.00 to 46.00
Six to 24-inch, Chicago	40.00 to 43.00
Six-inch and over, N. Y.	28.50 to 30.50
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.865c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

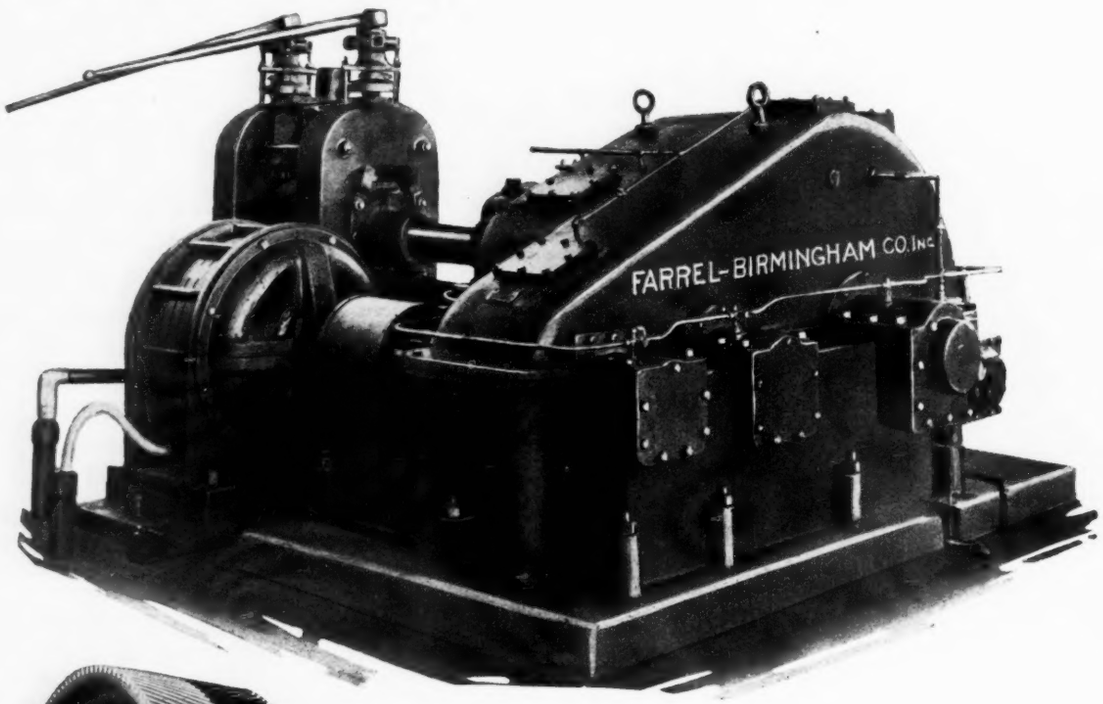
Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

GEAR SPECIALISTS SHOULD BUILD MILL DRIVES AND PINION STANDS



The trend of mill drives toward higher speeds necessitates a thorough understanding of the theory of gear tooth forms, and of their reproduction in metal. The Farrel-Sykes continuous tooth herringbone gear has established a new standard of accuracy in gearing and approaches more closely than any other type of gear the ideal tooth contour.

When the gear cases are designed by specialists, smooth, reliable and highly efficient operation is assured.

The "Gear With a Backbone"

FARREL-BIRMINGHAM CO., Inc.

SUCCESSOR TO
FARREL FOUNDRY & MACHINE CO., ANSONIA, CONN., AND
BUFFALO, N. Y., AND BIRMINGHAM IRON FOUNDRY OF DERBY, CONN.
ADDRESS REPLIES TO THIS ADVERTISEMENT TO BUFFALO PLANT
322 VULCAN ST., BUFFALO, N. Y.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.75c, Conn., for copper

Sheets	
Yellow brass (high)	15.37½
Copper, hot rolled	17.62½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	20.25
Seamless copper	20.12½
Rods	
Yellow brass (high, full turnings)	13.62½
Naval brass	14.75
Anodes	
Copper, untrimmed	15.12½
Wire	
Yellow brass (high)	15.87½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.75 to 5.00
Chicago	4.25 to 4.75
Cleveland	4.50 to 5.00
St. Louis	4.00
Heavy Yellow Brass	
New York	3.00 to 3.25
Heavy Copper and Wire	
New York	5.50 to 5.75
Boston	5.00 to 5.25
Chicago	4.50 to 5.00
Cleveland	4.50 to 5.00
St. Louis	4.25 to 4.50
Composition Brass Borings	
New York	4.25 to 4.50
Yellow Brass Tubing	
Cleveland	3.00 to 3.25
Light Copper	
New York	4.50 to 4.75
Chicago	4.25 to 4.75
Cleveland	4.00 to 4.50
St. Louis	4.00
Light Brass	
Boston	2.00 to 2.25
Chicago	2.25 to 2.75
Cleveland	2.00 to 2.25
St. Louis	2.25
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	13.00 to 13.50
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	3.50 to 4.50
Mixed cast, Cleveland	4.00 to 5.00
Mixed cast, Boston	3.75 to 4.00
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt alumnium No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	7.62½

Metals

Quotations Hold Steady Despite Continued Dullness—Tin Stages Advance—Copper Unchanged

New York—Steadiness in the face of dullness continues to be the most fundamental characteristic of the nonferrous metal markets. In addition, the tin market has staged one of its characteristic and spectacular rises with prices above 27 cents, or 5 cents above the low point in June. The quotation now stands at 26.75c.

The end of the summer finds markets cheerful regarding improvement in the autumn, though there are no expectations of a rapid development. European, as well as domestic considerations, enter into this hopefulness.

Copper—Custom smelter copper has been somewhat firmer in the past few days, with more general asking prices at 7.75c, Connecticut, but consumers have refused to go above the recent actual sales price of 7.50c. The extreme lowness of the price, the smallness of custom smelter intake, together with a little recent business, make the custom smelters less anxious for sales than recently. Other producers remain nominally out of the market. Nothing has been done in the way of further correction of over-production. Export business is light.

Zinc—Despite the extreme lightness of new business, smelters have been able to hold prime western zinc at the nominal price of 3.80c for nearby. The market has practically resolved itself into a waiting contest between buyers and sellers. The latter expect a further decrease in stocks on account of curtailed production. The ore market continues unchanged at $23 a ton.

Tin—New business in tin in the past week has been light but formation of the pool has had a strengthening effect on the market. Domestic deliveries of tin totaled 5276 tons in August, bringing the total for the eight months to 46,126 tons or a decline of about 8 per cent compared with the corresponding 1930 period.

Lead—Fair buying has been done in the past week for September shipment. A little also has been done in prompt. Prices are firm and unchanged.

Aluminum — New business continues dull but prices are steady on new metal. Remelted No. 12 is down to 9 cents or less.

Distillate Stocks Low; Sulphate Prices Easier

New York—Stocks of distillates are short, especially benzol and toluol. While demand in general is light, some distributors are two weeks behind on delivery and talk of price advances is again heard. Phenol and xylol ares lightly more active. Naphthalene shipments have slumped, most consumers being covered until contracting starts in about four weeks. Prices are unchanged. Reported settlement of the nitrate difference abroad have failed to strengthen sulphate of ammonia prices, which are easier.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.18
90 per cent benzol	0.18
Toluol	0.27
Solvent naphtha	0.24
Commercial xylol	0.24
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.30

Quicksilver $84 a Flask

New York—Quicksilver in small spot lots is quiet at about $84 a flask. Some prices are heard at lower figures, especially for larger lots on shipments from the West.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
August 26	7.50	7.87½	7.25	27.00	27.25	4.40	4.22½	3.80	22.90	6.60	35.00
August 27	7.50	7.87½	7.25	27.05	27.30	4.40	4.22½	3.80	22.90	6.60	35.00
August 28	7.50	7.87½	7.25	26.95	27.20	4.40	4.22½	3.80	22.90	6.60	35.00
August 29	7.50	7.87½	7.25	27.37½	27.62½	4.40	4.22½	3.80	22.90	6.60	35.00
August 31	7.50	7.87½	7.25	27.15	27.50	4.40	4.22½	3.80	22.90	6.60	35.00
September 1	7.50	7.87½	7.25	26.75	27.15	4.40	4.22½	3.80	22.90	6.60	35.00

Europe

British Industry Encouraged with New Government—Russia Buys 23,000 Tons German Rails

London—(*By Cable*)—British industry views the new government favorably, but there is no indication of an immediate improvement in the business situation. Foreign inquiries for steel have expanded moderately. Continental manufacturers are offering sharp competition. Some orders for steel sheets have been received from Japan. Steel and iron production in Great Britain remains low. Stocks of pig iron are heavy from long delay in purchasing by consumers.

STEEL's correspondent at Berlin reports lower domestic prices are anticipated in Germany. Russia has placed an order for 23,000 tons of rails in Germany; otherwise export business is quiet. The tin plate trade is said to be the only bright spot in the market. No important changes are noted in France and Belgium, business being scarce and prices weak.

Belgian Steel Market Is At Lowest Level

Brussels—The holiday period which characterizes August is adding its influence to the prevailing dullness in the iron and steel markets, and business at the Belgian iron and steel exchanges in the past two weeks has been practically nothing. The uncertainty which prevailed owing to the referendum in Prussia has now lifted, but no sign of revival is apparent as the generally unsatisfactory financial position of the world is such as to discourage attempts towards larger activities.

British works that usually pass substantial orders for Belgian semi-finished steel have restricted their purchases and it is now difficult to dispose of the few thousand tons which remain on the hands of Belgian, French and German producers.

In view of this position prices are crumbling and £2 19s 0d ($14.30), f.o.b. port of shipment, has been offered by a Newport firm, in England, for 1000 tons of 2-inch basic bessemer billets. Such offers are not taken into consideration, but they indicate the tendency of the market. The price of sheet bars remains between £3 4s and £3 5s ($15.50 and $15.75) per ton. The extra of 2s 6d per ton which is usually charged on open-hearth steel billets is being contested and in some cases is reduced to 2s (48c) or 1s 6d (30c). Generally speaking the price of semi-finished steel is, blooms £3 ($14.50), 2-inch billets £3 3s ($15.25).

The merchant bar market is dull and few inquiries are being received, although the Chinese market is becoming slightly more active, and some orders have been received for material of second quality. Some business has also been transacted with India, but no orders have been received from South America, nor from the Near East. Merchant bars are quoted at £3 7s 6d ($16.35) f.o.b. Antwerp. Beams are quoted at £3 4s ($15.50) for normal sizes and £3 5s ($15.65) for British sizes. The structural steel market shows probably the most restricted activities. Holland is in the market, but no orders are being received from Scandinavia or from the Argentine. The plate and sheet markets are unchanged.

Export Prices Simplified

WITH this issue Steel, in quoting export prices on iron and steel by Continental producers, substitutes one price for the Continent in place of individual quotations for France, Germany, Belgium and Luxemburg. At channel or North Sea ports, through which most exports pass, prices usually are competitive, hence a simplification of this market by quoting what might be termed a Continental price. Domestic prices for all European producers are continued unchanged.

German Steel Market At Complete Standstill

Berlin—Although relaxation of sentiment in German economic life during the past weeks has made further progress, business in the German iron and steel market has remained at a standstill. The financial crisis, of course, has resulted in complete stagnation of business, and at

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 31	British gross tons U. K. ports	Continental metric tons Channel or North Sea ports
Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)		
PIG IRON		
Foundry, 2.50-3.00 Silicon	$14.22 — 2 18 6	$11.42 to $11.66 — 2 7 0 to 2 8 0
Basic bessemer	14.58 — 3 0 0	10.94 to 11.18 — 2 5 0 to 2 6 0
Hematite, Phos. .03-.05	14.94 — 3 1 6	..... — .....
SEMIFINISHED STEEL		
Billets	25.52 — 5 5 0	$14.09 to $14.34 — 2 18 0 to 2 19 0
Wire rods, No. 5 gage	41.31 — 8 10 0	24.30 — 5 0 0
FINISHED STEEL		
Standard rails	40.10 — 8 5 0	$31.59 — 6 10 0
Merchant bars	1.52c — 7 0 0	.70c to .72c — 3 4 0 to 3 5 0
Structural shapes	1.68c — 7 15 0	.68c to .69c — 3 2 0 to 3 3 0
Plates, †¼-in. or 5mm.	1.79c — 8 5 0	.84c to .85c — 3 16 0 to 3 17 0
Sheets, black, 24 gage or 0.5mm.	1.90c — 8 15 0	1.68c to 1.71c — 7 12 6 to 7 15 0
Sheets, gal., 24 gage, corr.	2.01c — 9 5 0	1.98c to 2.01c — 9 0 0 to 9 2 6
Bands and strips	2.06c — 9 10 0	.91c to .94c — 4 2 6 to 4 5 0
Plain wire, base	1.84c — 8 10 0	1.11c — 5 1 3
Galvanized wire, base	2.39c — 11 0 0	1.36 — 6 3 9
Wire nails, base	2.39c — 11 0 0	1.13c — 5 2 6
Tin plate, box 108 lbs.	$3.28 — 0 13 6	$3.20 — 0 13 2

British ferromanganese L17 9s 6d ($85.00) delivered Atlantic seaboard, duty-paid. German ferromanganese L9 0s 0d ($43.80) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Marks	
Fdy. pig iron, Si. 2.5	$14.22 — 2 18 6	$11.76	300(2)	$12.83	460	$17.94	78
Basic bessemer pig iron	14.58 — 3 0 0	12.74	325(1)	11.58	415	19.67	35.50
Furnace coke	2.67 — 0 11 0	5.68	145	5.16	185	4.92	21.40
Billets	25.52 — 5 5 0	16.46	420	18.14	650	25.41	110.50
Standard rails	1.79c — 8 5 0	1.41c	785	1.57c	1,210	1.32c	127
Merchant bars	1.63c — 7 10 0	.90c	500	.80c	615	1.31c	126
Structural shapes	1.90c — 8 15 0	.99c	550	.81c	620	1.30c	125
Plates, †¼-in. or 5mm.	1.95c — 9 0 0	1.26c	700	.94c	725	1.53c	147
Sheets, black, 24 ga. or 0.5mm.	1.90c — 8 15 0	2.19c	1,215	1.82c	1,400	1.22c	117
Sheets, galv., corr., 24 ga. or 0.5mm	2.03c — 9 7 6	2.39c	1,325	1.47c	1,900	3.43c	330
Plain wire	2.06c — 9 10 0	1.80c	1,000	2.08c	1,600	2.15c	207
Bands and strips	2.06c — 9 10 0	1.01c	590	.78c	600	1.54c	148

*Basic. †British ship-plates, Continental bridge plates. xGerman.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

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present consumers as well as producers and merchants are most reluctant to contract new orders.

The average occupation of the works is now doubtless below 50 per cent of capacity and the outlook for an increase of orders is discouraging. Large withdrawals of foreign credits which Germany suffered during recent months will result in a further contraction of business, the effects of which are bound to react on the iron and steel industry.

The building trade will shortly be at a standstill, machine makers report a decline of their rate of operation to 42.8 per cent, the motor industry is reporting large reductions of output, and the railways which formerly were one of the largest consumers of iron and steel, are bare of funds.

New orders expected to be placed by the railways for an additional 40,000 tons a month of material for the permanent way have not materialized so that only 20,000 tons a month remain to be executed. If the substantial orders from Russia had not been booked, the works would operate still more unsatisfactorily than they do now. Out of the 120,000 metric tons of merchant bars contracted for by the Russians, only about 60,000 to 70,000 tons have been placed so far.

German steelmakers maintain an attitude of reserve toward export markets, and seem not much inclined to follow the downward trend of prices. They ask £3 15s ($18.25) per ton for merchant bars, but it is understood they are also selling below that level. It cannot be doubted that the financial stringency in this country will compel them sooner or later to restart exports at a heavy rate. The Bismarck-Hutte has booked an order for 50,000 boring tubes for the Argentine Republic. An order for 6250 metric tons of steel sleepers has been booked for the South-African railways in competition with British manufacturers.

Loss in German Half Year Is 40 Per Cent

Berlin—Output of pig iron in Germany during the first six months of the year was 3,343,906 metric tons, against 5,592,730 tons in the first half of 1930, showing for this year a decrease of 40.4 per cent. Output of steel ingots and castings in the first half of this year was 4,617,186 metric tons, compared with 6,581,993 tons in the corresponding period of last year, showing a decrease of 30 per cent for this year. Output of rolled steel during the first six months totaled 3,234,480 metric tons, against 4,605,716 tons in the first half of 1930, a decrease of 29.8 per cent.

In June the German blast furnaces produced 575,477 metric tons of pig iron, again over that of May.

Output of steel ingots and castings and rolled steel in June also exceeded that of May. Comparisons follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings	Finished steel
1913*	204	910,000	993,000	970,000
1928	101	985,000	1,210,000	881,000
1929	95	1,117,000	1,354,000	940,000
1930	63	808,000	962,000	679,000
1931				
Jan.	61	603,104	772,776	539,850
Feb.	53	520,176	759,633	527,436
Mar.	56	560,005	811,146	583,428
April	58	529,161	743,341	527,686
May	59	554,648	744,459	494,651
June	61	575,477	778,809	560,657

*In present boundaries.

Luxemburg Output Shrinks In First Half Year

Brussels—Pig iron production in Luxemburg during the first half of this year was 1,042,000 metric tons, against 1,342,000 tons in the first half of 1930, a decrease of 22.25 per cent. The output of steel ingots and castings during the first six months amounted to 1,012,000 metric tons, compared with 1,194,000 tons in the corresponding period of last year, a decrease of 15.5 per cent.

In June this year production of pig iron and steel ingots and castings gained slightly over May. Comparative figures follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings
1913	....	212,000	111,000
1928	38	231,000	214,000
1929	37	242,000	226,000
1930	26	206,000	189,000
1931			
Jan.	25	183,130	171,591
Feb.	25	168,848	161,140
March	25	178,384	172,474
April	25	171,142	165,822
May	25	169,000	166,000
June	25	172,000	175,000

French Output Cut Deeply To Year's Lowest Level

Paris—There was a substantial decrease in the output of pig iron and steel in France in June, when production reached its lowest level for the year to date. Provisional statistics for the first half of the year indicate that the output of pig iron for the six months ending June 30 was 4,460,000 metric tons, compared with 5,184,000 tons for the corresponding period of last year, a decrease of 14.1 per cent. Output of steel ingots and castings for the first six months of this year totaled 4,159,000 metric tons, against 4,815,000 tons in the first half of 1930, a decrease of 13.6 per cent. Output of iron ore during the first half amounted to 20,534,000 metric tons, compared with 25,012,000 tons in the first six months of last year, a decrease of 17.8 per cent.

In June the French blast furnaces produced less pig iron than in May. Output of steel ingots and castings in June was also below that of May. Comparisons are as follows, in metric tons:

Mon. ave.	Iron ore	Pig iron	Steel ingots and castings
1913	3,588,000*	756,000*	581,000*
1928	4,094,000	832,000	792,000
1929	4,220,000	864,000	808,000
1930	4,038,000	841,000	783,000
1931			
Jan.	3,802,000	801,000	746,000
Feb.	3,396,000	726,000	693,000
March	3,565,000	775,000	722,000
April	3,306,000	739,000	675,000
May	3,194,000	725,000	674,000
April	3,312,000	739,000	675,000
May	3,194,000	724,000	674,000
June	3,265,000	695,000	649,000

*In present boundaries.

French Trade Loss Small In Spite of Depression

Paris—Exports of pig iron and ferroalloys from France during the first six months of this year were 240,000 metric tons, compared with 269,000 tons in the corresponding period of 1930, a decrease of 10.8 per cent. Exports of other iron and steel products in the same period amounted to 1,516,900 metric tons this year and 1,625,500 tons in 1930, a decrease of 6.7 per cent. Imports of pig iron and ferroalloys in the first half of this year totaled 60,000 metric tons, against 96,000 tons in the first half of last year, a decrease of 37.5 per cent. Imports of other iron and steel products during the first six months of this year were 114,000 metric tons, compared with 137,000 tons in the corresponding period of last year, a decrease of 16.8 per cent.

In June this year France exported more pig iron, ferroalloys and iron and steel products than in May, and 51,000 tons in June, 1930, the exports for June this year going principally to Belgium. Comparisons follow in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferro-alloys	Steel*	Pig iron and ferro-alloys	Steel†
1928	5,000	9,500	54,000	343,000
1929	4,000	14,000	48,000	281,000
1930	14,000	21,000	45,000	273,000
1931				
Jan.	11,000	23,000	42,000	246,000
Feb.	14,000	22,000	44,000	265,000
March	12,000	19,000	44,000	265,200
April	9,000	16,000	41,000	249,000
May	8,000	16,000	32,000	232,200
June	7,000	18,000	37,000	259,100

The above figures include returns from the Saar district.

*Semifinished steel, plates and sheets, tin plate, steel tubes, steel scrap.

†Ingots, semifinished steel, merchant bars, structural steel, steel tubes, wheels and tires, rails, hoops and bands, wire rod and wire products, plates and sheets, tin plate, steel scrap.

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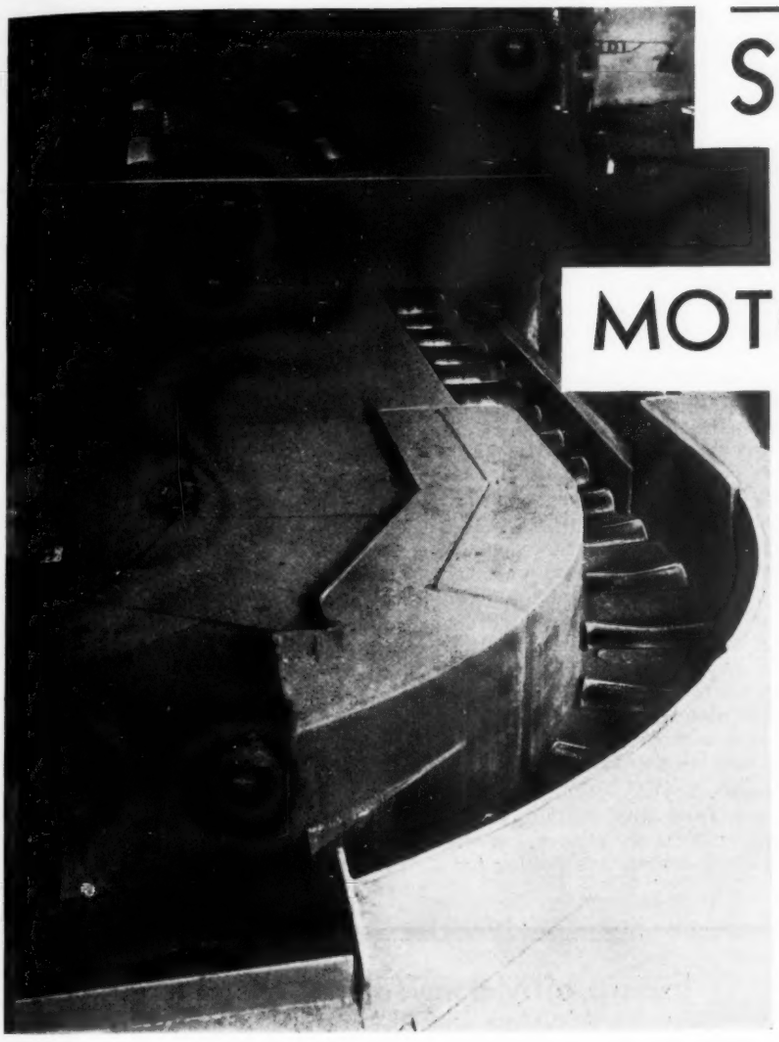

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Machinery

GENERAL improvement in machine tool inquiry, without corresponding improvement in volume of sales, has continued to prevail through the past week. The automotive industry still is the most prolific of encouraging rumors, as well as a better than average source of orders. Government departments and schools are contributing considerable quotas to what little actual business there is. Additional machinery orders from Russia are confidently expected. As has been the case several times in the past year, a distinct note of optimism is to be detected in the Chicago territory. One $50,000 equipment order justifies this.

New York—Machine tool inquiry is slightly improved, but indicates little toward active buying. August with most dealers and builders was about on a par with the previous month, a few noting a slight increase. Fourteen lathes for a New York technical school have been placed. They will be built at Cincinnati.

Government inquiry holds fairly well and bids are in from navy department on four engine lathes for Norfolk, a precision lathe for Hampton Roads, an automatic screw machine for Portsmouth, two grinding machines for the same station and several machines, including a motor driven pipe bending machine, for Pacific Coast stations. Two inquiries are out for manufacturing interests in New York territory. Bureau of yards and docks took bids Sept. 2 on a two-ton bridge crane for Newport.

Worcester, Mass.—The month closed quietly after a spurt which looked like the forerunner of a general upward trend in machinery demand. A seasonal late summer slump, however, is accounted responsible for this decline in most quarters, rather than continued slackening.

Government inquiry is brightening, although tardiness in closing is annoying to many manufacturers. Beginning of improved demand from automotive sources, recently noted, is looked upon in many quarters as the milestone from which future progress will be measured.

Foreign demand has slackened and most shops have practically completed orders on hand for Russia. However, recent developments lend support to the belief that Russian interests are getting ready to close on more machines at an early date.

Pittsburgh—A number of scattered orders for machine tools have been closed during the past week on business which has been pending for some time. Most of these have been for companies closely associated with the steel industry, or mill builders.

A few inquiries for tools still are before the market. Included are a few tools for Westinghouse Electric & Mfg. Co. August volume of sales probably will run somewhat under that of July. A few sellers, however, report a slight improvement over July.

Cleveland—Machine tool builders here have to a fair degree participated in business resulting from the putting into production of certain new automobiles. Hopes in this direction are running ahead of orders, however, though active inquiry justifies this in a number of cases.

Sales executives who have observed reactions of leading machine tool users through the ups and downs of many years, confidently believe that unusual machine tool design activity of the past several months has built up potential business to a high degree. Competitors are watching each other keenly for signs of plant modernizing. When one makes a move, many others will follow suit, is the inference drawn.

Chicago—Even without definite assurance from any individual customers or buying groups, several machine tool dealers are looking for a mild upturn in equipment inquiry and sales within the next 30 days. This view is based partly on additional requests for estimates. With the Labor Day holiday, usually marking the end of the vacation season, advanced well into the month this year, expectations are that, should any improvement occur, it is likely to come late in September or even in October.

In the meantime programs continue to be deferred. Plans of the Caterpillar Tractor Co., Peoria, Ill., have been postponed at least until about Jan. 1. Allis-Chalmers Mfg. Co., Milwaukee, has had a fairly substantial program under consideration, but has not decided to take immediate action. A mechanical refrigerator maker may order as much as $30,000 worth of presses, etc.

Three northern Illinois light manufacturing plants have taken estimates on shop equipment in the last few days. Great Northern railroad has a forging press, welding equipment, a 36-inch shaper and a 30-inch lathe on inquiry, but may not purchase for another month. Bids will be received for $50,000 worth of tools for the St. Louis board of education on Sept. 2. Milwaukee board of education last week took bids on nine small lathes, but purchase may not be made before another week.

Oilgear Co., 1403 West Bruce street, Milwaukee, manufacturer of hydraulic pumps, presses, broaching machines, etc., has received an order for 23 broaching machines for delivery to the Toledo transmission plant of the Chevrolet division of General Motors Corp. The order is valued at about $50,000, according to S. M. Heller, secretary and treasurer of Oilgear Co.

Exports of Metal Working Machinery

	July		January through July	
	1931	1930	1931	1930
Engine lathes	49	138	379	859
Turret lathes	8	35	182	315
Other lathes	45	39	429	485
Vertical boring mills and chucking machines	18	80	194	221
Thread-cutting and automatic screw machines	28	36	150	459
Knee and column type milling machines	17	25	109	224
Other milling machines	63	65	317	515
Gear-cutting machines	42	27	289	289
Vertical drilling machines	19	23	204	356
Radial drilling machines	7	15	104	137
Other drilling machines	50	91	1,168	1,146
Planers and shapers	42	14	206	254
Surface grinding machines	10	6	112	149
External cylindrical grinding machines	25	56	224	406
Internal grinding machines	28	8	196	247
Tool grinding, cutter grinding, and universal grinding machines	65	208	540	1,174
Pneumatic portable tools	946	1,815	6,236	12,354
Chucks for machine tools	1,332	1,135	6,251	17,131

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

NEW HAVEN, CONN.—Berger Bros. Co., 35 Derby avenue, will build an addition to its plant for the manufacture of surgical appliances. Plans are by D. Orr, 956 Chapel street. Structure will be 40 x 120 feet, five stories. Estimated cost, $100,000.

LOWELL, MASS.—Lowell Electric Light Corp., J. A. Hunnewell president, 35 Market street, awarded contract to the New England Power Construction Co., 89 Broad street, Boston, for a service building on Perry street. Estimated cost, $100,000.

WESTBORO, MASS.—Department of public welfare, Commonwealth of Massachusetts, will let contract for construction of a boiler house at Lyman school here. Cost is estimated at $50,000. Densmore, LeClear & Robbins, Park square building, Boston, are architects.

New York

BUFFALO—Buffalo Dry Dock Co., 251 Ganson street, has a building permit for erection of a pump house.

COMSTOCK—Department of correction, state office building, Albany, N. Y., will receive bids Sept. 24 for blacksmith and machine shops at the state prison here.

ELMIRA — International Harvester Co., 606 South Michigan avenue, Chicago, has awarded contract to Austin Co., 16112 Euclid avenue, Cleveland, for a service building to be built here at an approximate cost of $40,000.

New Jersey

ATLANTIC CITY—William V. Clayton Inc. has been incorporated with $125,000 capital by Harcourt & Steelman, to deal in machinery.

JERSEY CITY — Asphalt Process Corp. has been incorporated with 2500 common shares by United States Corp. Co., 150 Broadway, New York, to deal in tools and machinery.

NEW BRUNSWICK—Universal Self Lubricating Bearing Co. has been incorporated with 200 common shares by John J. Rafferty, 5 Elm row, to manufacture bushings.

PERTH AMBOY—Craft Metal Studios Inc. has been incorporated with 100 common shares by John C. Stockel, 174 Smith street, to do ornamental iron work.

WEST CALDWELL—Metal Frame Aquarium Co. has been incorporated with 100 common shares by Elias B. Cohen, 354 Bloomfield avenue, Newark, N. J., to manufacture aquariums.

Pennsylvania

FORD CITY—Municipal clerk will receive bids for a 500-kilowatt diesel engine for the municipal power plant.

LANCASTER—L. O. Beard Tool Co. has been incorporated with $25,000 capital by L. O. Beard, 610 South Ann street, Lancaster, and Charles L. Beard, Spring City, Pa., to manufacture and repair tools, machinery and machined parts.

MIDDLETOWN — War department, office of the quartermaster general, Washington, will build a boiler house at the airport here, from private plans. Structure will be 50 x 67 feet.

PHILADELPHIA—Bureau of supplies and accounts, navy department, Washington, will receive bids Sept. 15 on schedule 6397 for 16 forced draft vertical blowers, turbine driven.

PHILADELPHIA—Globe Metal Mfg. Co. has been incorporated with 750 no par shares by James Pressman, 5831 Rodman street, and George Lipschutz, 2436 North Fifty-fourth street, to manufacture and sell electrical fixtures, appliances and novelties.

PHILADELPHIA—American Control Corp. has been incorporated with 1000 no par shares by Howard A. Lang, 364 West Duval street, and Raymond Fischer, 816 Mason avenue, Drexel Hill, Philadelphia, to manufacture and trade in electric switches and automatic controls.

Ohio

BELLEFONTAINE—Board of education will receive bids Sept. 8 for shop equipment for high school to be erected.

BELLEVUE—Bellevue Iron Works Inc. has been incorporated with $50,000 and 500 common shares by Don Bell, 207 East Main street.

CINCINNATI—Stevenson Bros. Machinery Co., Lockland, Cincinnati, will build an addition, 35 x 85 feet, to contain machine shop and offices. Grunkemeyer & Sullivan, 3717 Eastern avenue, Cincinnati, are architects.

CINCINNATI—Bode Bodies Inc., 1655 Central avenue, is building a plant unit according to private plans. William Miller & Son, 1950 Central parkway, are contractors. Structure will be 25 x 59 feet.

CLEVELAND — Andrews Spray Equipment Co. has been incorporated with 250 no par shares by J. H. Smart, 308 Euclid avenue.

CLEVELAND—Cleveland Draft Control Corp. has been incorporated with 250 no par shares by J. J. Fuerst, Union Trust building.

COLUMBUS—Smith Bros. Hardware Co., 580 North Fourth street, is considering erection of a 6-story, 50 x 100-foot warehouse unit.

Indiana

ANDERSON—Anderson Battery Co. has awarded contract to F. Cook, Middletown, Ind., for a plant on Center avenue. Approximate cost, $40,000.

INDIANAPOLIS—Commercial Electric & Mfg. Co. has been incorporated with 200 common shares by J. C. Jordan, Colfax, Ind., and E. L. Brown, Indianapolis. Company will manufacture electrical and gas cooking appliances and will do metal stamping work. Plant is to be established at 424 South Meridian street.

MARION—Indiana Motor Truck Corp. is arranging for additional facilities and will start production of diesel-powered trucks. H. K. York is manager.

Michigan

BENTON HARBOR—Hogue Tool & Staple Co. has been incorporated with $20,000 capital by F. P. and H. F. Rosback, to manufacture, sell and lease machinery.

DETROIT—Chevrolet Motor Co., 3044 West Grand boulevard, has plans for construction of a shop for apprentices. Approximate cost, $75,000.

DETROIT—Chromed Screw Corp. has been incorporated with $10,000 capital by Henry A. Strouse, 5120 Baldwin avenue, to manufacture and deal in screws, bolts and nuts.

DETROIT — Timken-Michigan Co., 3631 Parkinson avenue, has been incorporated with $150,000 capital by Fred Glover, West River road, Gross Ile, Detroit, to manufacture and deal in plug valves for pipe lines.

DETROIT—Gar Wood Engineering Co., 4196 Bellevue avenue, Detroit, is moving to a larger plant at 409 Connecticut avenue, where floor space will be three times that of the former plant. Company manufactures oil burner units and boilers.

ECORSE—Murray Corp. of America, 1424 Aberle avenue, Detroit, has started construction of two additional wings at its heavy stamping plant here. Units will be 80 x 260 and 60 x 160 feet. Albert Kahn, 1004 Marquette building, Detroit, is architect.

Illinois

CHICAGO—Sanitary District of Chicago, J. J. Sullivan clerk, 910 South Michigan avenue, will receive bids Sept. 10 for a sludge dehydrating machine.

CHICAGO—Illinois Steel Co., 1319 Wabansia avenue, will build a 1-story storage unit, 75 x 402 feet, at 1697 McHenry street. Cost is estimated at $30,000. L. C. B. Holmboe, South Chicago, is architect.

CHICAGO—Anderson Foundry Co., 1725 West Carroll avenue, has been in-

corporated with $20,000 capital by Mortimer Porges, City Hall Square building, to manufacture metal castings and operate a foundry.

Southern States

WASHINGTON—Pennsylvania Greyhound Management Corp., 1336 New York avenue, is receiving bids for the construction of a 1-story service building, 115 x 300 feet.

DAYTONA BEACH, FLA. — Florida State Airways Inc., 413 Fifth avenue, has plans for construction of a hangar here. Charles W. Sellick is manager.

ELLENTON, FLA.—Mizner Industries Inc., 337 Worth avenue, Palm Beach, Fla., has acquired a 25-acre tract near here and will install equipment for mining limestone.

AUGUSTA, GA.—Augusta Canal Co. proposes to build a new power plant at a total cost of approximately $1,000,000. Burns & McDonnell Engineering Co., 400 Interstate building, Kansas City, Mo., is engineer.

ALTO, LA.—United Gas Public Service Corp., subsidiary of United Gas Co., 1601 Commerce street, Houston, Tex., will build a compressor station near here with daily capacity of 60,000,000 cubic feet. Structure will be 50 x 130 feet. Estimated cost, $350,000.

NEW ORLEANS, LA.—Rorothi Refrigerating Machine Co. has been incorporated with 100 no par shares by Joseph B. Rochelle, 4908 Arts avenue, to manufacture machinery.

SCOTLAND NECK, N. C.—Livermon Boat Transport Co. has been organized by Carl R. Livermon and Charles J. Shields. Company is inquiring for steel and alloy castings, for the manufacture of a device for inboard and outboard power boats.

MEMPHIS, TENN.—Mississippi Valley Barge Line will erect a terminal on a site on the Wolf river, recently leased through the Memphis harbor commission. Construction is to start immediately.

RICHMOND, VA.—Model Stoker Co. Inc. has been incorporated with $25,000 capital by Elmer C. Graves, 4 North Fourth street.

Missouri

KANSAS CITY — American Marble Corp., 1805 Brownell street, is reported to plan construction of a 50 x 80-foot plant for finishing stone, to cost $15,000. Equipment to be installed will include saws, planer, lathe and polishing machines. Estimated cost, $35,000.

Arkansas

BENTON — Arkansas construction commission, T. D. DeWitt secretary, Little Rock, Ark., plans to build a pumping station and install equipment on the Saline river, near here. Lund Engineering Co., Southern building, Little Rock, is engineer.

CONWAY—Arkansas state teachers college will build a 2-story industrial training building at an approximate cost of $150,000. H. L. McAlister is president. Plans are by Wittenborg & Deloney, Home Insurance building, Little Rock, Ark.

FT. SMITH—Solid Steel Scissors Co., Hurd J. Miller president, advises that the company is building a new unit, 50 x 124 feet, to cost $5000. Z. S. Rambo is contractor. Equipment to cost $6000 will be installed. (Noted Aug. 20.)

Oklahoma

BARTLESVILLE—Phillips Petroleum Co. has plans for a 70-mile pipe line, to include two pumping stations, with diesel engines and centrifugal pumps. A. H. Riney, Phillips building, is chief engineer in charge of construction.

TULSA—Oklahoma Valve & Equipment Co. is building a plant, 40 x 70 feet, near here, to contain a machine shop and nonferrous foundry. Industrial and oil field valves will be manufactured. Company recently was organized with Benjamin P. Hoffman as president and Beryl Hoffman as secretary-treasurer.

Texas

COLUMBUS—Central Power & Light Co., Alamo Bank building, San Antonio, Tex., is considering construction of an hydroelectric plant on the Colorado river near here. Project will not mature until plant on upper Colorado has been completed. Total cost is estimated at $5,000,000.

SANTA ANNA—Santa Anna Gas Co. has been organized with $30,000 capital by R. D. Golston. Company will install equipment to cost $15,000.

Wisconsin

KENOSHA—Municipal council proposes to build an additional incinerating plant. Bond issue of $95,000 has been provided. Plans are being prepared by Alvord, Burdick & Howson, 20 North Wacker drive, Chicago. William E. O'Brien is city manager.

PORT WASHINGTON — Milwaukee Electric Railway & Light Co., 231 West Michigan street, Milwaukee, will build a clay products manufacturing plant here in connection with its $20,000,000 steam generating plant project. Fred H. Luber is company engineer.

RACINE—Henry A. Nelson, commissioner of public works, will receive bids Sept. 15 for construction of a sewage treatment plant, former bids having been rejected. Total cost, with pumps and other equipment, is estimated at $660,000.

Minnesota

ELY—A. O. Knutson, municipal clerk, is having plans prepared for construction of a waterworks system, to include a pumping station and three pumps. Engineering department of Oliver Iron Mining Co., Wolvin building, Duluth, is engineer. Cost is estimated at $200,000.

MINNEAPOLIS—Handelan Mfg. Co., D. Handelan manager, 4901 Thirty-ninth avenue south, is inquiring for a brake and shears for shop which manufactures ventilating equipment.

MINNEAPOLIS — Navy department, Washington, will receive bids soon for erection of a hangar at Wold-Chamberlain field, here, for the naval reserve aviation unit.

MINNEAPOLIS—Marquette Mfg. Co., 409 Johnson street northeast, has started construction of a plant addition, 32 x 40 feet. Company manufactures automotive equipment.

South Dakota

WEBSTER — Northwestern Public Service Co. will build a 1120-horsepower light and power plant and install diesel engines. Plans are private.

Iowa

LE MARS—City council proposes construction of a municipal power and light plant. Cost is estimated at $425,000. Construction depends on outcome of election.

Kansas

HARDTNER—J. M. Miller, inventor of a new type of highway sign involving the use of metal, is reported to be planning erection of a plant.

TOPEKA—Santa Fe railway will erect an addition to its shops here, for car construction. H. T. Stephenson is superintendent and F. A. Isaacson, engineer, will be in charge of construction.

Wyoming

CASPER—State highway department, capitol building, Cheyenne, Wyo., will erect a 1-story mechanical and industrial shop here, 80 x 100 feet. Cost is estimated at $35,000. Goodrich & Krusmark, Turner-Cottman building, Cheyenne, are architects.

Pacific Coast

ALAMEDA, CALIF.—San Francisco Bay Airdrome, 2135 Webster street, has let contract for construction of an engine repair shop.

ALAMEDA, CALIF. — Construction quartermaster, L. Larson, 33 Pacific avenue, is in charge of construction of a group of air corps buildings here. Plans for a hangar, 200 x 440 feet, are being prepared. Pumping plant and depot supply building will be erected. Estimated cost, $750,000.

KEDDIE, CALIF.—Western Pacific railroad, J. W. Williams chief engineer, Mills building, San Francisco, will erect a maintenance unit here at a cost of approximately $25,000.

LOS ANGELES—Ferrell Brass Foundry, 1646 Tarleton street, is building an addition, 40 x 90 feet, to its foundry.

LOS ANGELES—Curtis Mfg. Co., 902 East Ninth street, advises that plant to be erected will have 160,000 square feet of floor space. Company has developed a line of heavy duty motor trucks with engine and transmission

mounted on leaf springs, the new plant to provide facilities for production of these trucks. (Noted Aug. 13.)

OAKLAND, CALIF.—Alex Martin Mfg. Co. Ltd. has secured plant space at 201 East Eleventh street and will manufacture automotive accessories. P. B. McCracken is general manager.

STOCKTON, CALIF.—Fraser Furnace Co., 445 South San Joaquin street, has let contract to F. Zinck, 2034 North Pacific avenue, for a 1-story plant, 110 x 150 feet, to be built on Scotts avenue. Cost, with equipment, $60,000.

CHEHALIS, WASH.—Tungsten Producers Inc. has been incorporated with $50,000 capital by W. F. West and J. A. Scollard.

SEATTLE—International Exploration Co. has been incorporated with $50,000 capital by William L. Paul, attorney, to engage in metalliferous mining.

SEATTLE—National Steel Construction Co., 425 Frontenac avenue, whose plant recently was noted as having been damaged by fire, has awarded contract to H. D. Stewart for erection of a manufacturing unit, 60 x 150 feet, and a galvanizing plant, 40 x 90 feet. (Noted Aug. 27.)

TOPPENISH, WASH.—King Murphy Mfg. Co. has been organized with $50,000 capital by W. A. Shumaker, to deal in machinery.

Dominion of Canada

ASHCROFT, B. C.—Ashcroft Water, Electric & Development Co. has acquired power rights on the Bonaparte river near here and will erect a 500-horsepower plant. Estimated cost, $25,000.

BELLWOOD, ONT.—Hydro Electric Power Commission of Ontario, 190 University avenue, Toronto, Ont., F. A. Gaby chief engineer, has plans for the erection of a power plant on the Grand river near here.

BRANTFORD, ONT.—Sun Machine Co., 7 Marlboro street, advises through E. Cutmore, manager, that first unit of the company's plant is erected, 40 x 65 feet. Machine shop, 25 x 70 feet, will be built. Company will produce electric washing machines and other electrical devices. (Noted Aug. 27.)

EAST YORK, ONT.—W. H. Heaton, comptroller of East York township, will receive bids Sept. 8 for construction of a pumping station and for equipment. G. R. Jacks is commissioner of works.

LONDON, ONT.—Ford Electric Refrigerators Ltd., W. Swarts manager, 277 Worley road, is reported to be in the market for equipment for an assembly plant to be established.

LONDON, ONT.—Public utilities commission, E. V. Buchanan general manager, is receiving bids for construction of a workshop and storage building, 50 x 120 feet, two stories. Equipment is to be purchased later.

OTTAWA, ONT.—F. C. Askwith, commissioner of works, is in charge of a proposed project for construction of an incinerator with capacity of 100 tons per day.

TORONTO, ONT.—A. Cross & Co. Ltd., 45 Elm street, will erect a 2-story plant addition for the manufacture of radio and auto parts.

HULL, QUE.—City Gas & Electric Corp., care of Brown, Urquhart Co. Ltd., 266 James street west, Montreal, Que., proposes to build a gas plant with compressors here, and possibly another plant at Three Rivers, Que. Estimated cost, $550,000.

MONTREAL, QUE.—City council is considering construction of an auxiliary waterworks plant on Atwater avenue, to contain six 30,000,000-gallon pumps. J. E. Gauthier is clerk.

New Trade Publications

IMMERSION HEATERS—Bulletin No. 230 by H. O. Swoboda Inc., 3400 Forbes street, Pittsburgh, describes its various bare electric immersion heaters for asphalts, tars, compounds, oils, varnishes and similar viscous materials.

WELDING—Plate 26 of its studies in structural arc welding has been issued by the Lincoln Electric Co., Cleveland, devoted to bar frames in arc-welded mill buildings. Engineering details are worked out as a guide in designing these frames.

COAL PULVERIZERS—The Fuller Lehigh Co., 85 Liberty street, New York, has issued its bulletin No. 906 describing and illustrating the company's new type C pulverizer, which is designed for small and medium sized, direct-fired boilers. There is a cross-sectional illustration of the pulverizer.

MODELS—Illustrations of engineering models produced by the Paul F. Hermann Co., Keenan building, Pittsburgh, are the principal selling points of a booklet being distributed by that company. Models are made for museums, for exhibitions or for the use of sales forces.

WIRE ROPE—A new 280-page wire rope and wire catalog which in reality is a handbook, presenting practically all information useful to the person buying or using wire rope has been issued by John A. Roebling's Sons Co., Trenton, N. J. It is profusely illustrated, carries ample tables, and depicts many of the important Roebling installations in recent years. The introduction relates how from the production of steel itself the manufacture of its products is closely controlled by the Roebling company. The booklet will be sent free.

CULVERT INSTALLATION—No interruption to traffic and substantial savings in construction costs are the advantages secured in a jacking method to install conduits, drainage openings and passageways under highways described in catalog No. 7 by the Armco Culvert Manufacturers association, Middletown, O.

MOTOR DRIVE BASE—A 16-page loose leaf data book of specifications, applications and dimensions of its floating motor drive base has been issued by the Kritzer Co., Chicago. The merits of this type of motor drive are painstakingly set forth, typical applications are illustrated, and recommendations for transmission belting are given.

MOTOR STARTER—In a folder the Electric Controller & Mfg. Co., Cleveland, describes its new No. 2 type ZO motor starter, a larger companion to its No. 1 ZO starter. Eight outstanding features of this new type of starter are cited. Particular attention has been given to produce starter exceptionally quiet and efficient in operation.

GEARS AND MACHINERY—A 100-page catalog by the Earle Gear & Machinery Co., 4707 Stenton avenue, Philadelphia, depicts in table and picture the products of this company, indicated by the company's name. A map of the eastern part of the United States graphically tells the advantages of the company's location. The catalog is free for the asking, and is in effect a ready-reference on many gear problems and designs.

STEEL BRIDGE FLOORS—A booklet by the Carnegie Steel Co., Pittsburgh, illustrates the application of bridge floor construction and presents ample engineering data on this form of fabrication for this purpose. Illustrations show construction and formulas are given for determining strength and other data.

TENSION INDICATOR—A folder by Martin-Decker Corp., 3431 Cherry avenue, Long Beach, Calif., describes its tension indicator, a device for measuring the tension on any wire line. It is claimed that the indicator, which for general purposes is a small edition of the instrument used by the oil industry for determining loads on drilling lines, may be applied to the cable, the load read and the indicator removed in less than a minute's time.

RECORDING INSTRUMENTS—The C. J. Tagliabue Mfg. Co., Park and Nostrand avenues, Brooklyn, N. Y., has just issued a new general catalog, of more than 100 pages, describing its complete line of TAG controllers, recorders, dials, thermometers, hydrometers, oil testing instruments and moisture meters. Many applications of these instruments are listed. Several pages are devoted to a pictorial story of the company's products in their manufacturing processes.

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